A REFRESHER COURSE for HEALTH VISITORS and SCHOOL NURSES

Summarised Report of the Lectures given at The University, Hull, from 25th August — 8th September, 1945

Organised by the

WOMEN PUBLIC HEALTH OFFICERS' ASSOCIATION
7 VICTORIA STREET, LONDON, S.W.1

Price T[illegible] 4/- [illegible]gs

IN extending a hearty welcome to Hull to members of the Women Public Health Officers' Summer School, Dr. Helen Standring, Medical Officer for Maternity and Child Welfare for Kingston-upon-Hull, congratulated the members on the excellent programme before them.

She hoped that they would benefit not only by the lectures but, what was of far more value, by the pooling of ideas and exchange of experience with their colleagues.

She wished them a very happy and useful Conference.

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Programme

Saturday, 25th August.

8.0 p.m. **Inaugural Lecture.**
"Social Medicine and the Woman Health Officer."
NICHOLAS GEBBIE, Esq., M.D., D.P.M., D.P.H., Medical Officer of Health, Kingston-upon-Hull.

Monday, 27th August.

10.15 a.m. **"The Medical Aspect of Delinquency."**
FRANCIS H. BRISBY, Esq., M.B., Ch.B., Medical Officer, H.M. Prison Medical Service.

11.45 a.m. **"Special Educational Facilities for Handicapped Children."**
J. MORRISON, Esq., O.B.E., M.C., M.A., M.D., D.P.H., Senior Assistant Medical Officer of Health, School Medical Department, Hull.

Tuesday, 28th August.

10.15 a.m. **"Infant Feeding."**
T. MORTON STEWART, Esq., M.B., Ch.B., D.C.H., Hon. Asst. Phys., Victoria Hospital for Sick Children, Hull.

11.45 a.m. **"The School Child."**
E. D. IRVINE, Esq., M.D., M.R.C.S., D.P.H., Medical Officer of Health, Shipley, Yorkshire.

Wednesday, 29th August.

10.15 a.m. **"Recent Advances in the Control of Infections and Infestations."**
A. L. TAYLOR, Esq., M.D., D.P.H., Medical Officer of Health, Urban District of Rothwell.

11.45 a.m. **"Venereal Diseases in Childhood."**
R. C. WOFINDEN, Esq., M.D., B.S., D.P.H., M.R.C.S., L.R.C.P., Acting Dep. Med. Officer of Health, Rotherham.

Thursday, 30th August.

10.15 a.m. **"The Unmarried Mother."**
Miss L. E. BASHFORD, Moral Welfare Worker, Superintendent of the Hull Sheltering Home for Girls.

11.45 a.m. **"Problem Families: Subject for Discussion."**
R. C. WOFINDEN, Esq., M.D., B.S., D.P.H., M.R.C.S., L.R.C.P., Acting Dep. Med. Officer of Health, Rotherham.

Friday, 31st August.

10.15 a.m. **"The Work of the Port Health Service."**
R. H. MOYES, Esq., M.B.E., M.D., D.P.H., Deputy Medical Officer of Health, City and Port of Kingston-upon-Hull.

11.45 a.m. **"National Insurance and Social Security."**
Professor A. N. SHIMMIN, M.A., Professor of Social Science, University of Leeds.

Saturday, 1st September.

10.15 a.m. **"Influence of Maternal Nutrition on the Health of the Mother and Child."**
Miss GWYNETH GRIFFITH, M.D., F.R.C.S., M.R.C.O.G., Obstetrician and Gynæcologist.

11.45 a.m. **"Inside the Child Guidance Clinics."**
H. EDELSTON, Esq., M.B., D.P.M., Psychiatrist and Director, Bradford Child Guidance Clinic.

Monday, 3rd September.

10.15 a.m. **"Tuberculosis in Children."**
H. HARDY, Esq., M.D., D.P.H., Acting Asst. Medical Officer of Health and Senior Tuberculosis Officer, Kingston-upon-Hull.

11.45 a.m. **"Industrial Medicine—A War-time Review."**
J. W. SILVERSIDES, Esq., M.B., Ch.B., J.P., Industrial Medical Officer (part-time), Leeds.

Tuesday, 4th September.

10.15 a.m. **"The Care of the Premature Baby."**
Miss G. L. REED, Matron, St. Mary's Hospital for Women and Children, Manchester.

11.45 a.m. **"Immunising Vaccines."**
Miss CLARA STEWART, M.B., B.S., Assistant Medical Officer of Health, Public Health Department, Leeds.

Wednesday, 5th September.

10.15 a.m. **"Infections of the Ears, Nose and Throat."**
E. M. DEARN, Esq., M.B., Ch.B., D.L.O., R.C.P.S., Assistant Surgeon, Ears, Nose and Throat Department, Hull Royal Infirmary.

11.45 a.m. **"Social Implications of the Falling Birthrate."**
JOHN LANDON, Esq., M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.H., Medical Officer of Health and School Medical Officer, Stockton-on-Tees.

Thursday, 6th September.

10.15 a.m. **"Rheumatism in Childhood."**
D. C. MUIR, Esq., M.D., F.R.C.P., Consulting Physician, Hull Royal Infirmary, Physician-in-Charge, Rheumatic and Heart Clinics.

Friday, 7th September.

10.15 a.m. **"Penicillin."**
Miss BESSIE DODD, M.B., Ch.B., D.P.H., D.R.C.O.G., Resident Medical Officer, Hull Municipal Maternity Home.

2.30 p.m. **Concluding Lecture. "Education for Citizenship."**
J. H. NICHOLSON, Esq., M.A., Principal, University College, Hull.

Inaugural Lecture

SOCIAL MEDICINE AND THE WOMAN HEALTH OFFICER

By N. GEBBIE, M.D., D.P.M., D.P.H.,
Medical Officer of Health, City of Kingston-upon-Hull.

YOUR kind invitation to me to address you at this the inaugural meeting of your conference affords me the opportunity of extending to the members of your Association a warm personal welcome to the City, and of expressing the hope that your conference will be an unqualified success. Engaged as you and I are in the daily task of applying in practice the principles of the science of hygiene, we are apt to fail to appreciate the rapidity with which the scope and method of our professional work are changing. As the result of research in the laboratory and in the field our knowledge of preventive medicine is ever widening, our sphere of usefulness to the individual and to the community is gradually extending and our responsibilities are becoming correspondingly greater.

"There is little doubt," said the late Dr. Rivers, "that when the history of the medicine of to-day comes to be written, the greatest achievement will not be found in the operative procedures, the anti-toxins and the glandular extracts which bulk so largely in the estimation of the profession and of the laity, but in the systematic development of the public health service in our own country and the still more striking measures by which the tropical regions of the earth are being made available for the service of mankind in general."

In that systematic development of the public health service in this country, the woman health officer is playing an important part and will continue to do so in the future.

Like her fellow-workers in the public health field, the woman health officer was concerned with environmental hygiene in her early days. The female sanitary inspector, as she was then called, had important if limited scope in dealing with certain problems of domestic hygiene, with the visitation of homes where minor infectious diseases had occurred and with the supervision of female out-workers. The first Sanitary Inspector, or Inspector of Nuisances as he was called, in this country was appointed to the town of Ashton-under-Lyne in 1844, and the first Medical Officer of Health, Dr. William Henry Duncan, was appointed to Liverpool in 1847.

Such appointments indicated a change in the sanitary conscience of the people which, fostered by Edwin Chadwick and his fellow-workers and turned to practical account by Dr. John Simon (M.O.H., London, 1848), was to lead to the passing of the Public Health Act, 1875—our P.H. Magna Charta.

Environmental hygiene was to remain the chief concern of Public Health workers till 1907, when the Education (Administrative Provisions) Act of that year gave us the School Medical Service. Personal or Individual Hygiene now claimed attention, and the Social Services Legislation which

quickly followed, e.g., affecting National Health Insurance, Maternity and Child Welfare, Midwives, Widows, Orphans and Old Age Pensions, etc., widened the activities of public health workers. The shift of emphasis from environmental to personal health brought into prominence the need for women health officers to have nursing qualifications and experience, and resulted in the appointment of Health Visitors, School Nurses and Tuberculosis Visitors. The outstanding feature of this period was the amelioration of the social condition of the people—the "toiling masses"—and in that beneficent work these pioneer women health officers played a conspicuous part. "Improved conditions of life have gone far to counterbalance the evils of urban life, and among the influences conducing to this end the work of sanitary authorities and their sanitary officers stands high."

Gradually the attention of the public is being directed from disease to health, from pathology to physiology. The public and the medical and nursing professions are gradually becoming less disease-minded and more health-minded. In other words, our outlook is veering towards *positive* health. Instead of concentrating our efforts on making the diseased healthy we public health workers are realising the importance of keeping the healthy fully efficient (e.g., Physical Training, etc., Act, 1936).

We have thus become essentially teachers of hygiene, and as our horizon has expanded other workers have joined our ranks, e.g., Social Workers, including those concerned with mental and moral health, Almoners, etc.

With such a wide variety of activities, our workers in the public health field are apt to show a tendency to specialisation, and here a word of warning will not be out of place. Specialisation appears to be an inevitable trend of this modern age in all branches of human activity. A specialist has been defined as one "who knows more and more about less and less." The best specialist is the expert who combines a high degree of technical skill in his speciality with a sound knowledge of the theory and practice of his profession. In his Harveian Oration of 1931, before the Royal College of Physicians, Sir Robert Hutchinson said, "Specialism is inevitable; but, though favourable to the accumulation of facts, it is bad for the philosophy of knowledge. There is too little speculation and too little use of the imagination; and most scientific literature is barren in ideas." In her work as teacher of social hygiene, the woman health officer must sedulously avoid such narrow specialisation.

From the brief historical outline I have given you, it will be obvious that social medicine, with its roots deep into the past, is no new thing. It is only recently that it has had focused upon it the light of public opinion, both medical and lay. It was inevitable that the modern trend of thinking in terms of *positive* health should focus attention upon the social implications of health and disease. "It is being increasingly recognised in every branch of medicine that social, familial and industrial factors must be taken into account and appropriate trained help be involved," and we in the Public Health Service are becoming more and more aware of present-day tendencies towards a wider outlook in the science of preventive medicine and towards a more comprehensive system of Social Security.

As you know, general medical practice was at first remedial in character, for in those days the principles of prevention were unknown. When the family doctor gives advice to his patient on personal hygiene, to the convalescent on how to avoid another attack of illness, and to the mother of a sick child on how to keep the other children well, he is, of course, practising preventive medicine. The barriers between the two great branches of medicine, curative and preventive, are being broken down as our scientific knowledge of the predisposing and exciting causes of disease processes widens and deepens.

To these two great branches of medicine must now be added a third—social medicine. In his "Handbook of Social Medicine," Dr. F. Grundy puts the present position in proper perspective: "The boundary which separates social from preventive medicine is no better defined than that which separates preventive from curative medicine. The division is one of convenience, and, broadly speaking, rests on this, that whereas preventive medicine is mainly concerned with immediate causes of clinical disease, social medicine studies remoter causes of disorder and impaired vigour. *It studies mainly those factors in the physical, industrial and family environment which influence the incidence and course of diseases or the well-being of large numbers.*"

In the "Practitioner" for September, 1943, Dr. Charles has enunciated the following cardinal principles of the instruments of social medicine outside the hospital:—

1. In the causation of disease, "factors other than the actual morbid processes contribute to the etiology."

2. "Man is rarely sick to himself alone, the economic and emotional effects of his illness are transmitted to his family and dependants."

3. "In restoring the patient to health, use must be made of the instruments of social medicine."

I think it was "The Observer" which pointed out that, "For the new social medicine, new administrative methods are required—a new bottle, not an old bottle neck."

Every member of the staff of the public health and allied services must play a part in the development of social medicine. The Medical Officer of Health has travelled a long way from the "glorified plumber" days when he was truly "not a proper doctor." He must teach the new social medicine outlook and must inspire his Committees so to frame their policy that in securing the well-being of large numbers of the people the physical, industrial and family environmental influences will not be forgotten.

The woman health officer also has a part to play.

Whether she be Health Visitor, School Nurse, Tuberculosis Visitor, Midwife, Social or Moral Welfare Worker, the woman health officer has the great advantage of starting with the preventive outlook. In her training, emphasis must have been laid upon the preventive and social aspects of her work if she is efficiently to fulfil her principal role as a teacher of hygiene. Her advice, like that of the family physician, will be of greater value and will more readily bear fruit if she is conversant with the home

and living conditions of the family and if she keeps prominently before her mind the influence of nutrition, housing, occupation, use of leisure, and other social and economic factors on the physical, mental and moral state of those under her care.

The antagonism to home visiting met with in the early days has long since disappeared, thanks to the skill and tact of the pioneer public health nurses, and the present position can be summed up in the words of the mother who, in conversation with a neighbour, referred to the health visitor as "not like a proper nurse, more like a friend of the family." A tribute indeed to the members of your Association.

I have referred to the importance of the preventive and social outlook in the training of public health nurses. The need for a similar development in the future training of medical students is emphasised in the Goodenough Report. The preventive and social medicine aspects should permeate all stages of the teaching of medicine.

The influence of social conditions on the maintenance of health and on the occurrence and spread of disease is becoming increasingly recognised. A high standard of physical, mental and moral health cannot be secured in the slums of our great cities and towns, in the damp, neglected cottages of the agricultural labourers or in the unhygienic, over-crowded crews' accommodation on certain merchant ships.

If the social conditions are unsatisfactory, we are handicapped in our efforts to maintain health, to prevent the spread of disease, and to treat the sick. The standard of cleanliness, personal and environmental, cannot be raised, malnutrition cannot be avoided, and the spread of, e.g., scabies, influenza and the common cold, cannot be controlled where the social conditions are unfavourable.

The woman health officer, with her preventive outlook, trained to apply modern methods of preventive medicine to the solution of the social, moral, and economic problems associated with health and disease, is destined to play an important part in the teaching of social medicine. I have indicated that the principles of social medicine will soon be incorporated in the teaching of medical students, and I hope a similar emphasis will be placed upon preventive and social measures in the future training of nurses and welfare workers.

Thus the ground would be well prepared for all agencies to combine their forces in a concerted attack upon the social evils which beset the "toiling masses."

Departments or Institutes of Social Medicine are being set up in various Universities in this country—the first at Oxford, with Professor J. A. Ryle as professor.

These departments have three main functions:—

(*a*) Research; (*b*) teaching; (*c*) integration.

(*a*) RESEARCH: Our knowledge of the social aspect of the predisposing causes of certain diseases is incomplete. Social surveys are required to be undertaken regarding such conditions as malnutrition, rheumatism, gastric ulcer, etc.

Surveys are at present being undertaken at Oxford into the growth of young children, absenteeism due to sickness, and goitre incidence in certain parts of this country.

(*b*) TEACHING: In the case of medical students, nurses and welfare officers, emphasis should be placed upon the social and health aspects of the various problems of hygiene and of disease.

Propaganda for the general public should aim at emphasising *positive* health, and individual instruction should be carried right into the homes of the people.

(*c*) INTEGRATION: The information obtained by social surveys will be correlated with that derived from such other sources as general medical practitioners, hospitals, clinics, etc.

The Department of Social Medicine of the University will be the most suitable and convenient centre for the pooling of knowledge and the initiation of research.

As Sir A. Macnalty has recently put it, "All forces, medical, environmental, social and individual, must be assembled to maintain national health and to combat disease. As yet, this truth is only partly realised by the medical profession and imperfectly by the public at large. In spite of the Ministry of Health, seven Government Departments, a Statutory Body (General Medical Council), a special committee of the Privy Council (Medical Research Council) and numerous voluntary bodies, are concerned in the maintenance of the national health. Perhaps a wider knowledge and a deeper appreciation of the social aspects of health problems will lead, some day, to an integration of all these departmental functions."

These Institutes of Social Medicine will become the focal points for the correlation of the results of research and the centres from which will emanate the knowledge of the social implications of health and of disease. It will be our duty as workers in the Social Hygiene Field to pass on that knowledge to the people.

We are just beginning to appreciate the importance of the hygienic aspects of the housing of the people.

The architect, the engineer, and the building contractor can give us houses, but without a true appreciation of social hygiene they cannot give us homes. When opening the Hull Corporation's ten thousandth house on September 6th, 1938, the late Mr. Bernays, then Parliamentary Secretary to the Ministry of Health, said, "Bricks and mortar create houses but they do not always create homes. Vast new estates of houses which have sprung up are but the bare bones of communities. They have to be clothed with services to meet the religious, social and recreative needs of the new populations, if they are to develop into well-ordered and progressive communities . . . we must strive to see that . . . they are centres of . . . happy Christian home life." The woman health officier can help to turn houses into homes which will be the centres of happy, healthy family life.

Industrial welfare and the rehabilitation of the sick or injured worker offer us a wide field of activity. Here we have ample scope to study the reactions of the workers to their social hygienic environment, and we can

help the return of the sick or injured workers to full working and earning capacity in the shortest possible time by advice on personal hygiene and on the utilisation of measures of efficient treatment and after care.

We must bear in mind the principles of social hygiene in the re-planning and reconstruction of our cities and towns.

We must press upon the authorities the importance of zoning—residential areas, industrial areas, green and semi-green belts.

Reduction of densities of population and of houses in the congested areas of our cities, the establishment of community areas with community centres must be aimed at. Rapid, efficient and cheap transport of persons and of goods must be provided.

If the cost of transport of the people to and from work is too heavy and the rents of the new houses are too high, the remaining proportions of the family income available for food, clothing and the necessities of life will be insufficient and the results of our replanning and reconstruction will be disastrous. You will remember that Dr. McGonigle, at Stockton-on-Tees, found that high rents meant insufficient nutrition.

We must help in educating the public in household management, in utilising adequately the social services, and in social hygiene. The war has necessarily slowed up our progress in Public Health and Social Medicine, but the woman health officer is ready to co-operate in securing a high standard of health and welfare for our people, based on sound principles of Social Medicine and imbued with the spirit and outlook of Positive Health.

REFERENCES :

Currie and Mearns: *Text Books of Hygiene.*
Dr. F. Grundy, M.O.H., Luton: "*A Handbook of Social Medicine.*"
Sir Robert Hutchinson: *Harveian Oration, R.C.P.,* 1931.
Dr. Charles: "*The Practitioner,*" *September,* 1943.
Sir F. Buzzard: "*The Practitioner,*" *September,* 1943.
Sir A. Macnalty: "*The Practitioner,*" *September,* 1943.

SPECIAL EDUCATIONAL FACILITIES FOR HANDICAPPED CHILDREN

By J. MORRISON, Esq., O.B.E., M.C., M.A., M.D., D.P.H.,
Senior Assistant Medical Officer, School Medical Dept., Hull.

HANDICAPPED children and the provision of special educational facilities for them are dealt with in full in the draft regulations of the new 1944 Education Act. Under this Act the duty is laid upon every local Education Authority to ascertain what children in their area require special educational treatment and to make arrangements for the provision of such treatment. For this purpose any child of two years or over may be brought by his parents (or an officer of the local Education Authority) for an examination by a Medical Officer, who will advise whether a child is suffering from any disability of mind or body. The issuing of certificates, as a preliminary to admission to a special school,

is now abolished except in cases where either the parents or local Education Authority ask for one.

The term " mental defective " is not used in the 1944 Act to describe any child *who is educable in a school.* In future it must be used only with reference to persons coming within the scope of the Mental Deficiency Acts. Thus children attending a school under the local Education Authority, who were previously classed as " dull and backward " or " feeble-minded," are now graded as " educationally sub-normal." If a child suffers from a " disability of mind " of such a degree as to make him incapable of receiving education, or if it is inexpedient that a child should be educated in association with other children either in his own interests or in theirs, he is reported to the Mental Deficiency Authorities.

Under the 1944 draft regulations, handicapped children are classified under the following groups:—

1. Blind pupils who have no sight or where sight is, or is likely to become, so defective that they require education by methods not involving the use of sight.
2. Partially sighted who by reason of defective vision cannot follow the ordinary curriculum without detriment to their sight or their educational development, but can be educated by special methods involving the use of sight.
3. Deaf pupils who have no hearing or whose hearing is so defective that they require education by methods used for deaf pupils without naturally acquired speech or language.
4. Partially deaf pupils whose hearing is so defective that they require for their education special arrangements or facilities, but not all the educational methods used for deaf pupils.
5. Delicate pupils who by reason of impaired physical condition cannot without risk to their health be educated under the normal regime in an ordinary school.
6. Diabetic pupils who cannot obtain the treatment they need while living at home.
7. Educationally sub-normal pupils who by reason of limited ability or other conditions resulting in educational retardation require some specialised form of education.
8. Epileptic pupils who by reason of epilepsy cannot be educated in an ordinary school without detriment to the interests of themselves or other pupils and require education in a special school.
9. Maladjusted pupils who show emotional instability or psychological disturbance and require special educational treatment in order to effect their personal social or educational readjustment.
10. Physically handicapped pupils, not suffering solely from a defect of sight or hearing, who by reason of disease or crippling defect cannot be satisfactorily educated in an ordinary school.
11. Speech defect. Pupils who on account of stammering, stuttering, aphasia or defect of voice or articulation not due to deafness, require special educational treatment.

Special educational facilities for pupils who are blind, deaf, physically handicapped, epileptic or aphasic, **shall** be provided and they **shall** be educated in a special school. A handicapped pupil of any other category **may** be educated in an ordinary school provided that their presence is not detrimental to other pupils. The legal interpretation of **shall** promises some interesting issues in the future.

Handicapped pupils attending ordinary schools will require special facilities.

The partially sighted—a favourable position in the classroom with special apparatus and equipment.

The partially deaf—individual hearing aids and tuition in lip reading.

Delicate pupils—education under favourable hygienic conditions with special provision for nutrition and rest.

Educative sub-normal—tuition adapted to their special needs with adequate facilities for practical work.

Maladjusted pupils—special educative treatment as may be recommended by the Child Guidance Clinic Staff.

Handicapped pupils may be sent to boarding schools. They may also be boarded out with foster parents so that they may reside near their special school or in the case of the maladjusted near a Child Guidance Clinic. The local Education Authority must arrange for these foster homes to be inspected—

(1) before the child is received;

(2) during the first month of residence;

(3) at least once a term thereafter.

The regulations also lay down guiding rules for the size and number of classes in new special schools.

Deaf, partially deaf—10 pupils in each class; minimum of 8 classes.
Blind, partially sighted—15 pupils; minimum 5 classes.
Speech defects—10 per class; minimum 3 classes.
Maladjusted—15 per class; minimum 3 classes.
Ed. sub-normal epileptics—20 pupils; minimum 5 classes.
Physically handicapped—30 pupils; minimum 4 classes.
Delicate—30 per class; minimum 4 classes.

Blind and epileptic children must attend boarding schools. Deaf pupils must be sent to a special school, and as a minimum of eight classes should be provided, this will mean ultimately the provision of more residential schools.

All the above recommendations in draft form at the time of the lecture have now been approved by the Ministry of Education.

INFANT FEEDING

By T. Morton Stewart, Esq., M.B., Ch.B., D.C.H.,
Honorary Assistant Physician, Victoria Hospital for Sick Children, Hull.

IN giving a lecture on infant feeding, it is quite impossible to cover the whole subject in the time at my disposal. One of the great problems to-day is the increasing number of women who do not successfully nurse their infants, and I propose to deal at some length with the problems and difficulties associated with breast-feeding.

Before going any further, I would like again to stress the necessity of getting the mother to breast-feed her child. I know all of you are aware of the advantage to both the mother and child, and I know you are all tired of being told them. The only contra-indication to breast-feeding is open pulmonary tuberculosis in the mother.

In an article in the B.M.J. in 1942, Professor McNeil of Edinburgh draws attention to the serious waste of breast milk caused by neglect or mismanagement of breast-feeding. The gross amount of breast milk consumed by a baby in six months is about 210 pints. After deducting the infant deaths in 1941, there were 635,062 survivors, and their requirements for the first six months were 16½ million gallons. He considers it a reasonable estimate that one-third of this quantity, namely, 5½ million gallons of essential ideal infants' food, was lost through unnecessary weaning.

In a report to the British Pediatric Association by Neale, Ciscie, Braid and Pierce in 1942, on an investigation into breast-feeding in Birmingham, the writers decided that the present influences which are adverse to breast-feeding were:—

(1) The doctor, who I am sorry to say was found to be worse than any single factor responsible for weaning babies;

(2) Queuing for shopping;

(3) Emotional disturbances, especially anxiety about husbands;

(4) Part-time work.

H. K. Waller, in the "Lancet" in 1943, presents evidence for the existence of a reflex controlling the outflow of milk from the breast. He suggests that the failure of breast-feeding, so common during the second and third week, is due to frustration of this "draught" reflex by over-distension. If this theory is correct, it lays emphasis on the need for putting the baby to the breast early; for feeding from both breasts at each feed, and for suckling in the early stages at least every three hours.

In an article in the B.M.J. early this year A. Witkin draws attention to a fact which he considers of great importance. He advises expressing by hand some of the milk immediately before each feed, and advises the giving of both breasts at each feed. He describes the mammary gland as consisting of several lobes round the nipple, and likens these

lobes with their ducts to a bunch of grapes with its stalk. The ducts from the lobules unite and finally form the main canal which expands in the areola as the lactiferous sinus. This tissue contracts at the base of the nipple and perforates it by separate orifices.

Failure in a large percentage of cases of breast-feeding can be traced either to a block in the ducts or at their exits. This obstruction results in a damming back of secretion in the ducts, and the effect is to produce engorgement of the breast. The result is that the breast becomes heavy and painful, and the infant finds great difficulty in grasping the breast. In a great number of cases it is possible to correct the condition by teaching the mother to express one or two teaspoonfuls of milk before each feed. As a result, the milk will flow more easily and the child will be able to get a larger quantity of nourishment. Once the outflow of milk becomes free and conditioned, the breasts will take care of themselves. Witkin also stresses the advantages of giving both breasts at each feed—five minutes at one breast followed by fifteen minutes at the other.

Before labour commences, the ducts should be emptied of the dry serum and milk. Once lactation is established, the breast should never be allowed to become engorged lest the power of the breast tissue to secrete milk be destroyed by back pressure.

I should like, however, to stress the fact that the vigorous suction of the infant at the breast is the important factor in establishing and maintaining an adequate secretion of milk.

Can we in any other way increase the secretion of milk? Lactogol by mouth has the reputation of increasing the quantity, but there is no scientific basis for this ; the effect is probably only psychological. The control of secretion of breast milk is by the lactogenic hormone of the anterior pituitary, and we can increase the amount by giving prolactin by intra-muscular injection. The treatment, however, is expensive. There are two preparations : Allen & Hanbury's Prolactin and Physolactin, put up by Glaxo, given in doses of 5, 5, 2, 2, 1 c.c.s. on successive days. I do not propose to say anything further about breast-feeding or its technique, as you are all conversant with that part of the subject.

It might be worth while to consider a few difficulties which may arise in the course of breast-feeding.

The commonest is under-feeding, in which the infant fails to gain weight, passes small greenish hunger stools, and cries practically incessantly. Ofter there is vomiting—due as a rule to air-swallowing. The infant gets most of its feed in the first five minutes, and twenty minutes is usually long enough to secure an adequate feed. The amount of milk taken after that time is negligible, and all the baby does is to swallow air.

The only certain method of making a diagnosis of underfeeding is by test feeding, and here I would like to say that one test feed is not a true guide ; several should be carried out in the course of the day and an average taken.

Up to 15 pounds, the average normal infant requires 2½ oz. of breast milk per pound of body weight per day. But babies are not all alike—some infants have a greater rate of growth and require slightly more food than the average, and there is not much danger of over-feeding such infants. In calculating the requirements of an infant, the expected, and not the actual, weight should be used.

For the first four or five days after birth, there is a loss of weight, but at the end of ten days the infant should have regained its birth weight. It is then reasonable to expect a gain in weight of an ounce a day for a further hundred days. Afterwards the baby should gain about a pound a month up to a year old. The calculation to ascertain the expected weight, therefore, should be made on the birth weight plus one ounce for each day of life, excluding the first ten days. For example, birth weight, 7-lb. 8-oz., age 30 days ; therefore, add 30 less 10, that is, 20-oz. or 1-lb. 4-oz. The expected weight, therefore, is 8-lb. 12-oz. at the age of 30 days.

The treatment of under-feeding is to give complementary feeds. I would like here to say that there is still some confusion between complementary and supplementary feeds. A complementary feed is one given after the child has sucked from the breast, in contradistinction to a supplementary feed, which is a substitution feed of artificial food given in place of a breast-feed. The latter should only be employed in the process of weaning. Complementary feeds should not be given too sweet, otherwise the child will later refuse the breast. Most textbooks say that such feed should be given either by bottle or spoon. My own view is that it should be given by spoon, as the teat of a bottle and the breast are very unlike, and the child may later prefer the bottle to the breast, as it finds it easier.

Over-feeding in the breast-fed infant is not so likely to occur as under-feeding, as nature tends to correct this fault by vomiting. The frequent small vomit, the frequent loose motion, and colic often lead the mother to think that the child is being underfed, and so a vicious circle becomes established. Usually the condition is improved by lengthening the time between feeds and by controlling the flow of milk by the mother's fingers partially compressing the nipple.

Although breast-feeding is a normal and natural act, it should be remembered that a mother—especially if it is her first baby—is ignorant of many aspects of the technique of breast-feeding, and it is our duty to give her as much help as possible, especially with the many details which make for the comfort of herself and her child.

Artificial Feeding

Many methods have been advocated at various times in the past, but the one which is simplest to use in practice is that advised by Paterson and Forest Smith—the method of simple milk dilution with added carbohydrate. The various calculations required are, first, the expected weight, about which I have just spoken ; second, the fluid requirement,

which is calculated as 2½-oz. per pound of body weight in 24 hours; third, the amount of cow's milk, which is taken as 1¾-oz. per pound of body weight; fourth, one level teaspoonful of sugar for each pound of body weight. The total amount for 24 hours is then divided into the number of bottles required, according to whether the infant is fed three-hourly or four-hourly.

In using National Dried Milk, the same calculations can be used as when the milk is reconstituted with water it produces cow's milk. A similar calculation is required when a proprietary full-cream dried milk is used, such as Cow and Gate, Glaxo or Ambrosia.

The humanised dried milks, such as Ostermilk, Humanised Trufood, Humanised Cow and Gate, Allenbury's Nos. I and II, when reconstituted with one measure dissolved in 1-oz. of water, will give a composition approximately that of human milk. It should be noted that no sugar is added. In the ordinary way, condensed milk should never be used for the feeding of normal healthy infants.

The caloric method of calculation of feeding is excellent, but it requires a little more calculation. It is, however, very useful for checking a baby's feed to find out if it is adequate.

I have purposely left the question of added vitamins until I had dealt with the actual feeding. The growing infant requires additional vitamins for the prevention of rickets and scurvy and for the prevention of infection by Vitamin A.

In spite of the widespread knowledge of the prevention of these two diseases, one still sees mild cases of rickets and occasionally scurvy being brought to hospital out-patient departments.

It has been estimated that for the prevention of rickets the child should be given 750 units of Vitamin D per day. It is customary to give preparations containing both A and D. The preparations commonly used and their appropriate doses are as follows:—

Ministry of Food Cod-liver Oil Compound: 1 teaspoonful.
Cod-Liver Oil (B.P.): 2 teaspoonfuls.
Cod-liver Oil Emulsion: 2 teaspoonfuls.
Seven Seas Cod-liver Oil: ½ teaspoonful.
Adexalin: 6 minims.
Radiostoleum: 5 minims.
Ostelin: 2½ minims.

Recently, experiments have been made with massive dosage, and it is recommended that the child should receive 50,000 units in one dose at one month old, 50,000 units at two months, and 600,000 units at three months. The perparation used is Calciferol. The first two doses are given in liquid form, and the third dose as a powder mixed with cereal, e.g., Patent Barley.

For the prevention of scurvy, it is necessary to supply Vitamin C, and it has been estimated that the basic requirements are from 10 to 30 mgms. of ascorbic acid per day. Orange juice contains approx. 10 mgms. to a teaspoon, so a child should be given from 1 to 3 teaspoonfuls

a day, diluted with a little water. Some infants cannot take orange juice, as it gives rise to vomiting or to slight looseness of the bowels. In such cases, it is necessary to give either ascorbic acid—which is available in tablet form, 5, 25 or 50 mgms.—or one of the other preparations, such as Rose Hip Syrup, 1 to 3 teaspoonfuls, or Black Currant Purée, 3 to 4 teaspoonfuls a day.

In artificially fed infants, the commonest signs of something going wrong are diarrhœa and vomiting.

Diarrhœa may be due to one of three causes:—

(1) An infection of the bowel by one of the dysenteric group of organisms;

(2) By indiscretion in diet or wrong feeding;

(3) By parental infection—that is infection outside the alimentary tract, naso-pharyngitis or middle-ear disease. Recently a great deal of work has been done and much has been written about latent mastoiditis.

This third group is probably the largest seen in ordinary practice. At this point I would like to stress the importance of seeing that nurses and all who have the care of young infants should not attend to them when there is a possibility of conveying infection. A nurse with a bad cold may be responsible for a severe or fatal diarrhœa in a young infant. The practice of wearing a mask when attending to a baby is one which should be encouraged at all times.

In the treatment of diarrhœa, the most important measure is to make good the fluid loss. If the child is not vomiting, my own preference is for half-strength normal saline by the mouth, on the basis of $2\frac{1}{2}$-oz. per pound of body weight, stopping all feeds for 24 hours. At the end of this time I prefer to put the child on half-cream dried milk, diluted with half-strength normal saline, in gradually increasing amounts for the next two or three days. Sometimes I use lactic acid milk in place of the half-cream dried milk.

If the diarrhœa is severe and vomiting is a prominent feature, I think it is wise for the child to be admitted to hospital, where subcutaneous or intra-tibial salines can be given.

Although this is not strictly within the scope of this lecture, I would mention that recently sulpha-guanabine and sulpha-suxidine are being used in the treatment of infective gastro-enteritis. These preparations are slowly absorbed from the intestine, so it is possible and advisable to give large doses—2 tablets of $\frac{1}{2}$-gramme every 4 to 6 hours for an infant of about 8-lb. weight.

Another valuable adjunct in the treatment of dehydration in gastro-enteritis of infants is the intra-tibial transfusion. Saline, glucose saline or Hartmann's solution (liquor Ringer Lactate, B.P.C.), is given by a special needle introduced into the bone marrow of the upper end of the tibia. This has undoubtedly saved many children in whom it is impossible, because of size or dehydration, to give fluids intra-venously. An-

other condition which gives rise to difficulty is vomiting. This may arise from various causes, and I wish only to mention a few. Occasionally an infant will vomit soon after birth, the cause being an organic stenosis of the œsophagus or duodenum.

Pyloric stenosis does not manifest itself for a fortnight or three weeks after birth, and is characterised by projectile vomiting and constipation. The child fails to gain weight and is crying and restless. In the typical case, peristaltic waves are seen crossing the upper abdomen from left to right. I consider that the treatment of choice is operation, although the condition can be treated by drugs—eumadin or belladonna.

In vomiting due to gastric causes, e.g., dyspepsia, all food should be stopped and the child given half-strength normal saline by mouth.

If the vomiting is severe, it is of great help to commence the treatment with gastric lavage, using normal saline. The return to ordinary feeding should be gradual, using either skimmed milk or half-cream dried milk.

In conclusion, I would like to draw your attention to the condition known as nutritional anæmia. It is found both in breast-fed and artificially fed infants.

Dr. Helen Mackay carried out extensive investigations in children of the poorer classes during the milk-feeding period, and showed that especially after the third month there may be an anæmia due to failure to receive sufficient iron. Such anæmia is brought about, firstly, by inadequate laying down of an ante-natal supply of iron, and, secondly, by the infant not receiving a full supply of maternal milk. Cow's milk and dried milk contain less iron than human milk. Dr. Mackay recommends the giving of ferri.-et am.-cit. up to 9 grains a day in the bottle feeds.

The importance of this anæmia is not so much the anæmia as the liability to infection which accompanies it.

Excessive prolongation of the milk-feeding period is always associated with anæmia, hence the necessity for introducing early into the infant's diet bone and vegetable broth which contains small quantities of iron.

In this lecture it has only been possible to touch on some aspects of infant feeding. I have not made any reference to the feeding of premature infants, as I understand you are to have a lecture on this later in the course. I hope that what I have said has served to refresh in your minds some of the many points which require attention in the successful feeding of infants.

THE SCHOOL CHILD

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" Wearing always the clearness of health in her cheek and its vivacity in a pair of fine cheerful eyes; . . . good teeth, stature, and, what was better, health without flaw and spirits of that tone and equality which are better than a fortune to the possessor."—(*"Villette," chapter* 1,*Charlotte Brontë.*)

THE title of this address, "The School Child" (selected for me by the Women Public Health Officers' Association), is so comprehensive that it must leave the lecturer great freedom of choice in the aspects to be discussed, which is perhaps not an advantage; but it has the great merit of focusing attention on the child as a whole, and not on defects and diseases as isolated factors. Further, it brings to mind, not the abnormal child, the handicapped child or the so-called interesting case, but all school children and more especially the ordinary ones.

Children in school are now some five million strong, and as the requirements of the Education Act (1944) are implemented their number will increase to somewhere between six and seven millions. It is important to consider how this great group varies from other sections of the community.

The age range may extend in the one direction as low as two years, and in the other to sixteen years of age, covering a period of great physical and psychological development. Growth is rapid, not so rapid relatively as in the first two years of life, but much greater than at any subsequent time. It is the period of the second dentition. It is an age when communicable diseases—both specific and non-specific—are common, and yet the total mortality is low, lower during the decennium five to fifteen years than during any other time of life either before or afterwards. School entry involves the child in a considerable readjustment from the home environment. In the child of three the social sense has been established and contact with other school fellows brings it into full play; yet emotional strains may be set up; there may indeed be two standards of behaviour, of discipline, even of language, with consequent difficulties. Puberty is already within the average girl's experience whilst at school, and, with the raising of the school-leaving age, most of the boys will also pass through it before they leave. The approach to school-leaving age foreshadows weaning from the family circle and entry into industrial life with the adventurous task of earning a living. There is also the development of the will and moral character, and the sense of right and wrong, and there is, too, an increasing interest in sex.

Finally, it is the one section of the community for which the State has assumed full responsibility in respect of medical care in its widest sense. And even before the Education Act (1944) was passed, the School Medical Service had had free access to school children and could supervise their

welfare in a way not possible to any public health service for any other part of the population.

All these characteristics point to the great complexity, physical, mental, and moral of the school child. We have to confess our inadequate knowledge of the physiological variations occurring in childhood, and admit freely the difficulties we experience in determining the stage at which they pass beyond the normal to the pathological, and in making a sound assessment of health.

As the health of the children improves—and no one doubts that there has been enormous improvement during the thirty years the School Medical Service has been in operation—more and more important will it become to consider the children in health rather than in disease and to secure if possible more precise definitions of health in the child.

We know a good deal about disease, about defects and treatment, but we are still groping for a clear idea of health. Certainly no one yet knows how to assess whether a particular child is at his highest level of health, consonant with his inheritance. We do not even know how to assess nutrition—the very multiplicty of formulae, the diversity of views, and the abundance of the literature proves this. Is the average the normal? Certainly the environment in the average is far from the ideal, and given better environment and better feeding, most children would improve; and Brewer stresses that physiological variations which are normal can, through faulty environment, become pathological. Physical fitness is not the same as health and capacities of different sorts and in different degrees are not necessarily even measures of health or even of nutrition. We must try to get a clearer concept of what is average and what is ideal.

Health may be defined as the harmonious development of the innate powers of the child, and can only reach its peak in a favourable environment. In its assessment, we have to think not merely of the absence of recognisable disease but of the functional capacity of the different systems and of the child as a whole.

Sir George Newman gives four criteria for health in childhood:—

1. Satisfactory growth.
2. Satisfactory physical activity.
3. Happiness.
4. Physical efficiency.

I would add:—

5. Spontaneity.
6. Resiliency.

Growth and Nutrition.

Growth and movement are characteristics of living things. In the child, growth proceeds in orderly fashion, rapid in early infancy, not so quick in the phase seven to eleven years, and then with another spurt in adolescence. It is not uniform throughout the body; thus the brain is almost full-grown at seven years, the lymphoid tissues show rapid growth in early childhood; muscles grow relatively to the body through childhood. The growth of the eyeball in the consequent changes in vision is well known. There is also a seasonal influence in growth.

Nutrition is the sum total of all the metabolic processes derived from the intake and assimilation of food, reflected in the individual. It is the keystone of the arch—"sound nutrition is everything in childhood." It is no accident that from 1933 nutrition forms the subject of the first chapter in the "Health of the School Child"—the Ministry's Annual Medical Report —but its eminence had been stressed on previous occasions. Much work has been done on nutrition, but we still do not know all about it; in fact, we find it hard to define and there are some who would abandon the term as indefinable, and declare nutrition by present methods to be unassessable. But however imperfect our knowledge of its measurement, it seems to me we gain nothing and lose much by abandoning efforts to assess it. That weight and height bear relationship has long been known. Various formulae have been devised (Tuxford—so far regarded as the best—Honeyburne, the Inden Ponderalis, the Inden Pelidisi, the Nutrition Quotient) giving relationships variations from which, in excess of a determined amount, have been regarded as indicating abnormal nutritional states. Recently there have been efforts to determine standard annual weight increment for each sex in different age, weight and height groups

The clinical assessment of nutrition, imperfect as it is, is still regarded as the most reliable. One must always have in mind the ideal child—alert, active, bright eyed, clear skinned, with good colour (especially of the mucous membranes), good posture and carriage. Various other specialised tests are employed, e.g., percentage of haemoglobin, Slik lamp examination of the eye, examination of the tongue for glossitis, also gingivitis, etc. One must recognise the variations in physical types, in complexion, in the disposition of the child, in cleanliness and grooming; all factors which may mislead. One has to think not only of the child's present state but of its variation from the past, and to distinguish the effects of past nutritional disaster, the signs of old rickets, the presence of decayed teeth, etc., from signs of present inadequacy: and one must remember that physique is different from nutrition. There are different types of physique by inheritance, but in nutrition we need only think of satisfactory, borderline, and definitely unsatisfactory states.

The state of a child's nutrition determines its health; conversely, disease and many other factors affect nutrition. If food, fresh air and sunlight, warmth, exercise, rest and cleanliness are fundamentals to health, food undoubtedly comes first; food adequate in quantity, balanced as to content, free from harmful bacteria, appetising by appearance and flavour, and skilfully prepared. It is interesting to note in passing that the nutrition of the children in a survey recorded by Magee, who details the various clinical criteria employed, showed that there has been no appreciable deterioration during the war and showed also a fairly close relationship between the figures for nutrition standards obtained by School Medical Officers and Medical Officers using special techniques in the same areas, though the latter rated a higher percentage as of *poor* nutrition. This does not prove that the two sets of observers selected the same children as being undernourished.

SCHOOL CHILDREN.

Returns for England and Wales, 1939 (per cent. of total examined).		+ Good	+ Fair	+ Poor
R.M.I.'s of $1\frac{1}{4}$ million children	...	89%	11%	0.5%
	No.	2,050	215	30
Adcock and Fitzgerald, 1944 ...	...	89%	9%	1.3%
School Medical Officers' Returns for Adcock and Fitzgerald's areas	1940	89%	11%	0.5%
	1941	87%	11%	0.4%
	1942	88%	12%	0.3%

+Good corresponds to (a)+(b) of Ministry of Education's classification.
Fair " " (c) " " " " "
Poor " " (d) " " " " "

About 10% of school children are regarded as undernourished. There are many experienced School Medical Officers who consider that the nutrition of many more than the 10% regarded as subnormal could be vastly improved by good feeding, and that therefore this figure is a definite underestimate. There is fairly general agreement that the addition of vitamin capsules to the diet has not improved the nutrition of the children in groups under observation. The nutritional state is generally found least satisfactory in the intermediate group, and best in the leavers.

There is a general belief that nutrition affects the use of intelligence, but whether it is directly related to actual intelligence itself is not quite so clear.

Physical Activity is a characteristic of growing animals. The young child in health is "bursting with energy"—the ordinary school child has few worries, and those he has are not long sustained. He can, as it were, utilise to the full his high spirits in spontaneous movement. If "strength through joy" has been associated with a tyrannical system, we need not bind ourselves to its virtues, and "health through movement" is certainly a principle of value. Children allowed free exercise in a gymnasium will display twice the enthusiasm that they show in formal work. It is convention that limits freedom of movement, but the child, within the limits necessary for social behaviour, should be free and unrestrained in movement. So that the nurse, seeing a child gay and lively in the school playground, may feel that there cannot be very much wrong—the child that is still or sluggish and "mopey" may not have severe physical diseases or defects, but it is not well, it is not in health.

Happiness. I believe happiness is a very important criterion of real health. Who can see the child radiating happiness, full of *Joie de vivre,* perhaps full of mischief, and doubt its health? *Joie de vivre,* as we understand it, is possibly a very special gift, the capacity for which may not be in everyone's endowment. But those who have it are nearly always well nourished.

It can be said that the child that is unhappy is not well, and continued unhappiness shows itself, in children, to the careful observer, by the anxious

eye, the slightly furrowed brow, posture, and the lack lustre expression, but perhaps even more characteristically by emotional upsets, fretfulness, sullenness, behaviour disorders, tics and other functional nervous disorders. Unhappiness may be due to physical discomforts resulting from defect or disease or undernourishment. But mental adjustment too is important, and if this balance is destroyed or has never been achieved as in the child deprived of security, of affection, of opportunity for self-expression or of kindly guidance, unhappiness is inevitable—which may express itself in many ways from delinquency at one extreme to nail biting and enuresis at the other. We speak often of health and happiness, but happiness is essential to health, and in any rational view it is part of it. The psychological pattern in childhood must never be neglected in any attempt to assess the health of the individual child.

Physical Efficiency has been the subject of much investigation and many tests of performance and of endurance have been devised, including circulatory tests, respiratory tests, dynamometer tests and various forms of fatigue point tests. Milligan has reviewed this subject and contributed his own "hanging from the bar" test—in which, in addition to considering height and weight and age, he ascertains how long in seconds the child can hang by the hands, self-supporting, from a horizontal bar. This test determines, as he says, "the stick-it power," and, in his view, is reliable. On the other hand, the effort of training and of the will may, in these endurance tests, prove to be considerable and variable. Again, no one is certain of the precise importance of physical efficiency. Exercises and training undoubtedly improve it, but efficiency in one direction may not be so useful in another.

Different recreational activities, sports and games, rambling, and so on, involve the activity of different groups of muscles, and require the training and co-ordination of different senses. And, as Kershaw has said, one man less physically efficient may be much more valuable to society than another with greater physical efficiency, but that is another story. But, by and large, the physically efficient enjoy better health than the inefficient.

Spontaneity is universal in school children who are well and happy. The child in health does not need constant stimulation. It may be, very often it is so, that the child wants to do something inconvenient for its elders or not at that time desired by its teachers—but it is spontaneous action that is characteristic of the child in good health.

Resilience seems to me a characteristic of young children in health, of the capacity to recover quickly from any setback—from acute illness, from injury, from sudden unexpected variations in environment, from disappointments, and so on. In respect of growth, this was well shown in German children after the 1914-18 war, and recent evidence in the same direction has been adduced. The child whose convalescence from illness is relatively protracted, who frets about temporary reverses, who is unduly sensitive to criticism, and so on, is not really in the best of health.

So much for the general features of health. But it is still true that the School Medical Service has to look for specific defects and specific

illness. What do the children in school show? Information on this point is best derived from the collated reports of the School Medical Service. The figures do not in recent times vary greatly from year to year, and the general trend is improvement. In 1938, the last year for which details are available, one third (approximately) of the school children were examined in detail by doctors, at routine medical inspections; another third at special medical examinations, and two thirds at routine dental inspections. Now, about three quarters of those examined at the routine inspections needed treatment for dental disease, one in twenty for vision defects, one in twenty-five for tonsils and/or adenoids (possibly an over-statement), one in a hundred for skin disease, one in 250 for running ear, one in 400 for defective hearing, one in 600 for speech defects, one in seventy for deformities, one in 2,000 for chorea; rheumatism of course is much commoner than this (it causes one quarter of all the chronic invalidity in London children). Consider the cases referred for special examinations (again a third of the school child population). We find skin diseases needing treatment to be thirteen times more frequent than in those examined in the routine groups, running ear four times as common, tuberculosis nearly three times as many, visual defects and squint, speech defects, heart disease cases as many as in the routine inspection group. During the year, about one in ten of the children were reported by nurses as verminous—indeed, this was possibly an understatement.

Now, many of the cases in the special inspection group will have been detected in the first instance by nurses and teachers, and it shows the importance of the work of both these professions in securing the welfare of the child.

In addition, large numbers of children were referred for "observation" —that is to say, in particular respects these children did not appear normal, but were not sufficiently below normal to demand active medical intervention; in some cases, no doubt, they were already receiving treatment. Tonsils and adenoids, organic heart disease and speech defects, loom larger than in the treatment lists. The cases of defects of vision, defects of hearing, and of chorea, requiring observation were about half as many as those requiring treatment, whereas, disease, tuberculosis, epilepsy and nervous conditions were referred for observation, either about as often as, or more frequently than, for treatment.

Of course, the age of the child comes into this question very materially, but the table given does not show this classification. Tonsils normally show enlargement soon after school entry—no doubt because of infections. Defects of vision become more significant as the child grows (both because of developmental factors and environmental strains), deafness becomes more manifest as education demands increase (though ninety per cent. of acquired deafness owes its cause to pre-school factors); postural defects show themselves in the junior and senior schools. So that certain defects are characteristically commoner at one age than another; in this, physiological variations are important, as Brewer has emphasised, adverse environmental factors being responsible for the translation to pathology.

The psychological development of the child proceeds also as he grows, and though it is, in the main, an orderly process it is difficult to describe it in precise terms or periods. The early years in school may reveal intense emotional upsets, tantrums and phobias and various nervous habits. Rather more stability is usual in the middle years of childhood, though the gang spirit is often strong and delinquency is said to reach its peak at eleven years or thereabouts. The onset of puberty is often accompanied by temporary loss of self-confidence, by swings in emotional feeling, with moodiness and romantic daydreaming; sex disturbances may occur and acute anxieties become manifest. It is important that the nurse should be aware of the difficulties in which growing up involves the child in his mental, social and emotional development, and should see the problems of child life in this setting.

The school age is notoriously an age of infections. It is common knowledge that as soon as the child, especially the protected child, goes to school, very often he gets all that is going; catarrhs and colds and sore throats are almost usual, and as they probably are healthy reactions to infection they need cause no great alarm at this stage—indeed, the lymphoid hypertrophy so evident at this age is probably protective and the response to these infections. The specific infections are common. In 1944, in the age group five to fifteen years, there were notified close on 60,000 cases of scarlet fever, nearly 32,000 of whooping cough, 11,600 of diphtheria, 2,500 of dysentery (probably an under-statement of the facts), 5,700 of pneumonia, and 75,000 of measles. But as measles is epidemic every second year, the figure is not an average, and if the average incidence in this decennium (about fifty per cent. of all the measles notifications) was maintained, then some 200,000 cases of measles occurred in school children in the first half-year of 1945. Thus, during 1944 (in round figures), one in 100 school children had scarlet fever, one in 180 whooping cough, one in 500 diphtheria, one in 1,000 pneumonia, one in 2,000 dysentery, one in 75 had measles, but during the epidemic of this year, as we have seen, one in 27 had measles. And yet mortality in children at school is low, very low. In 1938, the mortality between the ages of five and ten years was 1.87 per 1,000 living in the age group, and between the ages of ten and fifteen years, 1.19 per 1,000, compared with the crude death rate for the whole population of 11.6 per 1,000. Of the causes of death in that year, in this age group, diphtheria (now declining: 446 deaths in 1944 against 733 in 1938) easily led the way with over one sixth of the deaths, violence over one eighth, tuberculosis one ninth, digestive disease one twelfth, pneumonia one fifteenth, heart disease one sixteenth, and rheumatic fever one twenty-fifth. This points the finger at the killing diseases, but often they and many of the others, not killing, leave serious disabilities, either permanent or, more happily, temporary in character. The death rate for diseases contracted in childhood may only be reflected in the older age groups, e.g., rheumatic heart infections.

We have now perhaps a picture, sketchy and inadequate no doubt, of ordinary children and their risks, not of abnormal, greatly handicapped or exceptional children. I am deliberately excluding reference to the

seriously handicapped children, because my emphasis is on the average or the ordinary child. And so the school nurse can consider at once her responsibilities and her opportunities.

You know the controversy that has gone on about the desirability of abandoning routine medical inspections. On the one hand it is argued that without them many defects, such as visual defects, early heart disease, bronchitis, might remain undetected. On the other hand, that it is the child in action that matters, and that defects that do not show themselves to the observer of the child at work or at play are not of great import. It is plain that any defect or disorder or adverse circumstance that shows its effect in the child and observable without the aid of instruments, is almost certainly something that needs a remedy. The principle of "observation" for defects resupposes the need for routine inspection—for the deliberate effort to discover defects before they show themselves in action.

Brewer has said: "Life is dynamic, and its functions can be estimated only by repeated observations to detect secular changes. We can no more evaluate the health of an individual by a single examination than we can tell the rate at which a vehicle can travel from an instantaneous photograph. In both cases we can often presume what is likely to happen from the physical state of the machine."

Routine medical inspections are, of course, each an examination at a moment in a child's life, and by that fact alone they are self-limited in value, but, in my view, not only can they not be abandoned but they should be made more frequently, at least annually. You also know that during the war the Ministry of Education decided to discontinue the routine medical examination of the intermediate eight-year-old group and required an increased visitation of the schools by the school nurse, in particular of junior schools.

Single examinations have been replaced by many at different points in time, not so detailed, and carried out by nurses without the technical experience or aids of doctors. The nurse, with her professional background and experience of health and sickness, will see the child from time to time in its usual environment (and not specially prepared for the doctor's visit), and this resupposes home as well as school visitis in many cases. She will thus be able to gauge in one way and another the progress of the child. Her records must be accurate and informative if they are to be of real value to anyone. As you know, the whole question of school medical records is under consideration. It is my view that no single administrative step will do more to secure long-term benefits for the children and to secure fuller information regarding health than the maintenance and study of continuous, well-recorded observations of the child from birth onwards. All this shows more clearly than ever how well informed should be the Health Visitor and School Nurse on health, in its general sense, its importance and recognition.

She must still, however, play her all-important part in detecting defective sight, defective hearing, scabies and other skin disorders, and verminous conditions and bringing them to the notice of parents, teachers and doctors. She must still play her part in ensuring that the children do get the appropriate treatment. By her home visits she must endeavour, in a tactful

way, to modify anything in that environment unfavourable to the child; it may be, for example, that some friendly guidance will be necessary—it may be that school meals are obviously required. Whatever it is, she must do this. She must make the mother feel that the service is out to help the child. The School Nurse, who is also a Health Visitor, has certain advantages in this, and most of us will welcome the Ministry of Education's proposals to make the Health Visitor's certificate the necessary qualification in future for school nursing. The Health Visitor who is also a school nurse usually knows the child from an early age—can secure co-operation at a time when the baby is something of a mystery to the mother, and can watch progress both at home and in school in a continuous pattern, deviations from which are the more readily detected. She can, by helping to promote health and prevent disorders in infancy, ensure better health in school childhood. Even now sixteen per cent. of entrants need treatment for defects (other than defective teeth, subnormal nutrition or uncleanliness in their first year). Another indication of the importance of this field is in deafness. Ninety per cent. of acquired deafness is acquired before five years of age. The School Nurse can help the child and the mother and the teacher in relation to the problems of puberty, and, as I have said, these problems will affect many more boys at school than before the school age has been raised. When the nurse undertakes any survey for a particular object she should in addition look for the other things that matter. A cleanliness survey—and I rate this high in the work of a nurse—should be an opportunity to look at the hands (and what a lot can be learned from the hands), an opportunity to notice the carriage, stance, colour, and alertness of the eye. So it is with every visit to school—whether as a formal visit or casual visit. I suggest you do things differently from time to time. One time make a survey of the sanitary conditions, the lighting, etc., another time for child-cleanliness, and another time for infectious-disease contacts, etc., but always be thinking, "Is the child up to its best, and is its best as good as it can be?" This is the spirit that will do most for the children, and the outlook that will make her tasks most interesting for the nurse.

There is no doubt that the conscientious nurse looking for defects will find them. I say this in no cynical spirit—it is common experience, and it is proved by the results of special nurses' surveys for scabies, uncleanliness, vision defects, deafness, etc.

But if the School Nurse on the one hand should study the child as a whole, how he is in general, how he fits into his group, how good or adverse is his home environment, how well is he fed, clothed and shod, and so on; and on the other hand study and examine the children both systematically and on occasions for specific defects (bearing in mind the possibility of variations from the theoretical ideal, yet still within the normal range); she should do yet a third thing. It is this: to ascertain, so far as lies within her province, the interaction of one disorder on the child, of one disorder or defect on another, and so work back to first causes. Is the nail biting due to school worry or domestic difficulties? Is the enuresis of organic physical origin or psychological? Is the eye strain due to

refractive error or to bad lighting? Is it affected by bad teeth? Is dullness due to defective hearing or bad feeding or lack of sleep? Is speech disturbance due to faulty training, anatomic defects or anxieties? Is the slack posture the result of poor nutrition, of bad desks, of unhappiness? Is the dirty nose the result of carelessness or adenoids or an infected sinus? Is the emotionally unstable child the subject of rheumatism or has it undisclosed worries? What is it that is making the child unhappy? Is it some defect or illness or some environmental factor? These examples could be amplified and multiplied without end. Not that the nurse should, in the last resort, attempt the diagnosis, but, bearing these things in mind, she can make invaluable enquiries *in advance* for, and give the fruits of her own observation to the School Medical Officer, to whom the child is referred. And in this she can derive great help from the teachers—and, again, this depends on the relationship between the nurse and these professional colleagues who have so vital an interest in, and sympathy with, the work of our department.

Conclusion.

To conclude, I would say this: All children follow a pattern both physical and mental (in its widest sense), and both in the course of development and at any instant in time. But each of them is unique, with his own inheritance and environment, his own variations. We must think of nature and nurture, of inheritance and environment, in particular of feeding and nutrition. And we must remember that health is not represented only by a high standard of physical development, but by a harmony of all the elements that make a man. Above all, by a harmony in the mind, in the emotional and social spheres that makes for happiness.

The work of a School Nurse can be full and fascinating. It can be the fulfilment of a vocation in a real sense. There are few great opportunities afforded to anyone to make for the health and happiness of great numbers of children; there are few public services that have done more or that *can* have greater promise for the future than the School Medical Service, and few indeed, with less prospect of material reward, for more certainty of the children's appreciation, and few that have applied Fuller's seventeenth-century maxim more faithfully:

> "He who cures a disease may be the skilfullest, but he that prevents it is the safest physician."

In the past its purpose has been to cure disease, especially the "school diseases" and to remedy defects with the object of fitting the child for its education. But to-day it must do more, it must secure for children, for their own sake, their full chance of health abounding, joyous, free, and unrestrained. The reward for the School Nurse for her share in this work is pride and satisfaction in her achievement and the vision of children healthier and happier than before, and more likely as adults to enjoy "health without flaw and spirits of that tone and equality which are better than a fortune to the possessor."

RECENT ADVANCES IN THE CONTROL OF INFECTIONS AND INFESTATIONS

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General Considerations.

IN considering methods and possibilities of control, it is perhaps desirable briefly to run over the general principles which govern the spread of infectious disease. I think one cannot do better than use the old analogy of seed, sower and soil; the seed being the germ which causes the disease, the sower the means of transmission to the susceptible persons, and the soil the reservoir of susceptibles in the general population. Let us consider these three factors and see what, if anything, can be done about them.

In the present state of our knowledge, we must frankly admit that the infecting germ, like the poor, is always with us and that there is nothing that we can do about it.

In the case of the second factor, the position is perhaps a little more hopeful. Infection almost exclusively, in this country at any rate, arising from a human source, is spread in discharges, droplets or excretion, and something can be done to control this mechanism. At one time it was thought that a droplet, which, as you know, leaves the nose or throat in talking, laughing, and particularly in sneezing and coughing, had an effective range of only two or three feet. More recently, however, it has been proved that droplet nuclei, as they are called, are capable of survival for very long periods and may circulate in the air of an enclosed space, such as a room or hospital ward, and may even dry and become infected dust settling on objects or the floor. The modern term for this type of infective process is in line with the miltiary word "Airborne." Thus you will see that it is by no means necessary for a susceptible person to be in close contact with an infecting individual to acquire the infection. This conception will help you to appreciate the supreme importance of free ventilation and the admission of fresh air and sunlight or perhaps, as we live in this country, even of daylight, because it is known that the free circulation of air by drying and dilution, tends to inactivate the germs which very much more rapidly become harmless.

Great stress used to be laid on the value of terminal disinfection, that is disinfection of the house, clothing, bedding, etc., after the recovery of the patient or his removal to hospital. The modern view is that terminal disinfection is of little or no importance. What is chiefly needed is a thorough spring-cleaning of the premises, with abundance of soap and water and scrubbing, and windows left wide open for as long as possible. Because old beliefs die hard, terminal disinfection is still practised by Local Authorities, the general population having an almost pathetic faith in the "stoving" of their premises. I think they feel it is rather like the Chinese burning joss sticks to propitiate their demons. On the other hand, great importance is attached to concurrent disinfection, which is the immediate disinfection of discharges as soon as they are expelled from the body and of objects immediately they are infected.

Another recent conception is the recognition of the important role which is played by carriers in the dissemination of infection. Carriers, you will remember, are individuals who, whilst perfectly healthy and themselves suffering no ill effects, nevertheless harbour disease germs which they excrete either intermittently or continuously. The carrier state is of particular importance in the enteric and dysentery group of diseases, and on this point I will say more later in the lecture.

Thus, infection may be conveyed either directly, by contact or close proximity, or indirectly, by airborne infection, or by the ingestion of, or inoculation on to, or through, the skin of infective material. So much for the "sower."

The third factor we must consider is the "soil." It is customary amongst epidemiologists to refer to the community rather disparagingly as the herd. This term, whilst perhaps not very complimentary, has the advantage of being short and suggesting an aggregation of individuals. It is on the herd that the impact of infection falls either in mass, as during epidemics, or as individuals, as in cases of sporadic disease. What can we do to increase the resistance of the herd?

In the first place, we can aim at improving the environmental conditions and so raising the standard of health and fitness. One need only mention such things as good housing, free ventilation, adequate food, freedom from undue fatigue, avoidance of overcrowding, etc., etc. The adequate intake of vitamins, although desirable nutritionally, has not proved to be an important factor in increasing resistance to infection. One very important factor in the prevention of epidemics is the dispersal of susceptibles. Thus it was found that in 1940 the measles epidemic expected in London did not materialise, due, it is thought, to the evacuation of children from the London area. You will realise, of course, that this procedure has only very limited possibilities in normal times.

Finally, we are left with the problem of what can be done to protect the individual member of the community. Here we have, at any rate for a limited range of diseases, specific means of protection in the form of vaccination or of immunisation. One might mention smallpox, diphtheria, scarlet fever, the enteric group, and typhus as examples of this. Further, it is possible temporarily to boost up the resistance of a person who has been exposed to infection by the administration of serum containing ready-made protective substances called antibodies which help to tide over, and frequently abort, the impact of the infecting dose. This must not be confused with active immunisation. It consists only in, as it were, lending to the patient a temporary protection sufficient to last him until his own immunity mechanism can function or until the risk of infection is past.

I think we might consider individual infections to illustrate the foregoing remarks.

It is not unnatural, I think, to dwell, perhaps with a little justifiable satisfaction, on the more successful of our efforts, and few will dispute the value of diphtheria immunisation. The method of choice is still the two-shot use of A.P.T., with an interval of about a month between doses. This is proved to give a very high level of protection in the vast majority

of immunised children. Very recent work has suggested that using an antigen of great potency it may be possible to immunise with one injection only. As every Public Health Worker will realise, this would enormously simplify matters and make easier the obtaining of parental acceptance. Although it is early yet to assess successfully the permanent value of this method, it is reasonable to assume that its perfection will only be a matter of time. Whichever method of immunisation is adopted, it is considered good practice to give a refresher dose at about five or six years of age, and this practice is now widely followed throughout the country. One interesting point which has emerged is that, in spite of expressed doubts, the carrier rate amongst immunised children has been found to be, if anything, rather lower than amongst the unimmunised section of the population. Very recent carefully controlled work has amply upheld this assertion.

Vaccination against smallpox is falling steadily, and now rather less than fifty per cent. of children are vaccinated. Perhaps this is not of very great importance, provided we keep on the alert and have always at our command an adequate supply of lymph. It is rather amusing to remember that during the recent Glasgow smallpox outbreak a number, amounting I believe to a quarter of a million persons, came clamouring for vaccination under the spur of fear of infection—a striking commentary on whether the population does or does not believe in the value of vaccination.

With regard to the streptococcal group of infections, in which I include scarlet fever, erysipelas, puerperal pyrexia, etc., the position of recent years has improved considerably, although the problem of our friend the streptococcus is still far from being solved. In the case of scarlet fever, one is faced with the difficulty that sufferers from sore throat may transmit scarlet fever though themselves not be susceptible to it, and that many mild and unrecognised cases keep up the reservoir of infection. A recent example in my own experience might be quoted. Over a period of several weeks, cases of scarlet fever kept occurring in an infant school at such intervals that it was obvious that the cases were not infected one from another. A visit to the school disclosed the fact that there were in attendance two children with runny ears, one with purulent nasal discharge, and two with impetigo. These children were excluded from school and no further case of scarlet fever has since occurred.

With regard to treatment of scarlet fever, the use of antitoxin in severe and toxic cases is, in my opinion, of undoubted value and helps to shorten the febrile period and to lessen the risk of complications.

The sulphonamide drugs, hailed as conquerors of the streptococcus, have proved rather disappointing in the treatment of scarlet fever, and their use is usually restricted to the treatment of complications such as adenitis or otitis. Immunisation against scarlet fever is possible, but it involves a series of injections—five or six—at weekly intervals, and its use is really only justified or practicable for those who have to work in fever hospitals.

With regard to erysipelas, the position is much more satisfactory. With prompt and adequate dosage of sulphanilamide the condition rapidly clears up, and is losing its terrors for those who are called upon to treat it. Many cases of puerperal pyrexia respond promptly to sulphonamide

therapy, and here recent work has suggested that penicillin may prove of very great value. A recently published work, too, suggests that penicillin may be used with success in the treatment of streptococcal throat conditions, and some workers have reported satisfactory results in the use of penicillin lozenges in the treatment of septic throats.

Two conditions, the control of which is a constant headache for epidemiologists, are whooping cough and measles. Both have certan similarities in that they are most damaging in the very young age groups, in that they are extremely infectious in their earliest stages and in that they may, and frequently do, leave residual chest damage of a permanent nature which may lead to fibroid lung or bronchiectasis in years to come.

So far as measles is concerned, it has a well-known epidemic periodicity of two years, and thus we are able normally to forecast the onset of an epidemic with reasonable certainty. Whilst no method of immunising against measles exists, protection can be given by the use of convalescent serum, adult serum or placental extract, and this method is of great use in preventing or modifying attacks in the case of young babies or of debilitated children exposed to the risk of infection. The seriousness of measles as a cause of death in babies, usually due to the onset of bronchopneumonia, is not, I think, as widely recognised as it deserves to be. During a recent outbreak, the fatality rate was four per cent. in children under the age of one year, and you will thus realise the supreme importance of protecting, wherever possible, the under-ones from the risk of acquiring this disease.

Whooping cough is a disease about which high hopes have from time to time been entertained. It is unfortunate, however, that these hopes have by no means been fulfilled so far. Carefully controlled work using a toxoid for immunisation gave results which could only be described as very disappointing. As recently as last week, work was published on the use of a whooping cough vaccine amongst a very carefully controlled group of children, and carried out by extremely competent and conscientious workers. The conclusion was reached that no satisfactory evidence was forthcoming that any significant degree of protection had been afforded by the use of the vaccine. This, I admit, is at variance with the claims made by some American workers, and perhaps with further improvement of the vaccine we may look for improved results. In connection with whooping cough, it is now recognised that the disease is most infectious before and for a comparatively short time after the onset of the characteristic cough, and this makes early recognition and consequently early isolation an extremely difficult matter. It is thus most desirable to look for the onset of anything resembling a cold or cough in any child known to have been exposed to the risk of infection.

Cerebro-spinal fever is one of the fields in which sulphonamide therapy has proved eminently satisfactory. With the early and adequate use of this drug, extremely satisfactory results are almost universally obtained, and the daily lumbar puncture and administration of serum are now things of the past. One point of interest is the appreciation of the relatively low infectivity of cerebro-spinal fever. In a recently published series of more than five hundred cases, in no instance were two members of the same

household infected, nor was any member of the nursing staff, although no masks were worn and no special precautions taken.

Passing on to the enteric group, it is common knowledge that protection by T.A.B. is adequate against minor doses of infection. It is important to remember, however, that the protection thus afforded would be by no means sufficient to overcome a really massive dose of infection, and it is thus important to neglect no detail of hygiene and sanitation in ensuring freedom against enteric. The control of carriers still offers many difficulties, and work with the sulphonamide group has proved disappointing. The remedies still lie in either a surgical operation or careful education in the matter of personal hygiene and care.

The bacillary dysenteries, in this country almost entirely due to the Flexner and Sonné germs, respond very successfully on the whole to the use of some of the more recently produced sulphonamide group, notably sulphaguanidine and succinyl sulphathiazole. It has been discovered that an astonishing proportion of the community are carriers of these germs. As an illustration, one may quote the case of a residential nursery where, on the occurrence of a few cases of Flexner and Sonné dysentery, over a period of three or four weeks, rectal swabs taken from all children and staff disclosed an astonishing total of no fewer than seventeen healthy staff and children who were quite happily excreting dysentery germs without themselves suffering any ill effects. Once again, this state of affairs points the moral for scrupulous personal hygiene of toilet and hands, and particular care in the handling and preparation of food, especially in institutional communities.

Passing on to infestations, one of the most troublesome in this country has undoubtedly been scabies. Here the use of benzyl benzoate emulsion has superseded all the older methods of sulphur baths, etc. I have found a most satisfactory method of treatment is to give two complete applications of emulsion at a few days' interval, and by this method no preliminary bathing has been found necessary, and the precentage of cure has remained very high over a period of two years. At another clinic within my knowledge, equally successful results are obtained by preliminary soaking in a hot bath followed by one application of benzyl benzoate. The important factor is the absolute necessity for treating all inmates of the same household, sufferers and contacts, at the same time, otherwise ultimate re-infestation seems to be inevitable. No stoving of bedding, blankets, or clothing is now considered necessary by most workers, and in my own clinics this practice has been abandoned without any unsatisfactory result.

Pediculosis continues to flourish, especially, of course, pediculosis capitis. The older methods are still reasonably successful, but the recently introduced lethane oil does, in many cases, give extremely satisfactory results. Great hope is entertained of the insecticide known as D.D.T. This has been largely used abroad in the Services and has been found manificently successful. For personal application it can be used as a powder or solution, and when it is released for civilian use it is hoped that the nuisance of pediculosis will rapidly be overcome. An outstanding instance of its success was during the typhus outbreak at Naples. Typhus,

as you know, is entirely a louse-borne disease—no lice, no typhus—and a free use of D.D.T. on the whole population rapidly brought the epidemic to a close by killing off the vermin by whose agency alone the disease could be transmitted.

A further use to which it is hoped that D.D.T. may be put is its inclusion in the distemper with which the walls of new property are decorated. So used, it is said to persist in its insecticide action for a period of some months, and this it is hoped will serve to combat any risk of bug infestation in properties likely to be subjected to that risk. Unfortunately, the preparation is not yet available for civilian use, but its release in the near future can confidently be expected in view of the cessation of hostilities.

Some anxiety was felt regarding the toxicity of D.D.T., that is its possible harmful effect on people using or in contact with it, and a considerable amount of experimental work has been done to clear up this point. Although it has been found possible to cause undesirable effects by the use of quantities far in excess of any which would ever be used normally, it is now definitely agreed that risk in using this substance is almost entirely non-existent. From my own personal knowledge, I can say that in one factory where it is manufactured, no case of D.D.T. poisoning has ever occurred amongst workmen who have been working amongst it continuously for months.

Concluding Remarks.

We have dealt very briefly with the position as it stands at the moment in regard to the control of infectious disease in this country. Our problems admittedly are very much simpler than those which exist in many other parts of the world, and I think that the prevailing note is one of reasoned optimism. Certain it is that one feels that many more means are at hand than were available even ten years ago, and that however many problems remain to be solved, many pages of what was a closed book have now been opened and their contents understood. My belief is that we may look forward to the future with the certainty that many more advances are likely to be made and that many of our present difficulties and perplexities will successfully be solved.

VENEREAL DISEASE IN CHILDREN

By R. C. WOFINDEN, Esq., M.D., B.S., D.P.H., M.R.C.S., L.R.C.P.,
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DURING the present war many of the facts relating to venereal disease have seen the light of day for the first time. The memorable broadcast by the Chief Medical Officer of Health, Sir Wilson Jameson, followed by an intensive propaganda campaign by the Ministry of Health, Central Council for Health Education and Local Authorities is bringing home to the public the dangers of this evil in our midst.

To-day I propose dealing with one aspect of venereal disease—namely, venereal disease in children—which is, perhaps, more strictly within your province as a health visitor. Nevertheless, it is impossible, and indeed would be a mistake, to confine my remarks solely to venereal disease in children. The parents also must be considered—and more particularly the mother. David Nabarro, of Great Ormond Street Hospital, one of the greatest authorities on congenital syphilis in this country, has pointed out that: "In syphilis, as in tuberculosis, the family is the unit to be investigated," and I hope to show you the importance of this statement.

In this country there are only three "official" venereal diseases—syphilis, gonorrhoea and soft sore—and it is with the first two that we are really concerned.

SYPHILIS.

Pre-natal Syphilis.

It has been pointed out that the terms "congenital" syphilis and "hereditary" syphilis are misnomers in that the disease is not due to the transmission of defective genes. Some authorities have therefore preferred to call it pre-natal syphilis and this title is, perhaps, more strictly correct. The disease is caused by a micro-organism, the spirochaete pallida or treponema pallidum which is transferred from the mother to the foetus in utero at some time during pregnancy. When exactly the spirochaete passes through the placenta to enter the foetal circulation is not quite clear, but is nevertheless a matter of some importance. According to McCord no spirochaete has been found in a foetus earlier than the fourth month and many authorities hold that it is during the fifth month that the spirochaete passes the placental barrier to enter the foetal body. If this is so, then syphilis as a cause of early abortion loses its pride of place.

Let us consider for a moment the sort of history one obtains when investigating these cases of pre-natal syphilis. The teaching is usually that successive pregnancies pass from abortions through miscarriages, macerated foetuses, still births, premature living children, full term living syphilitic children to ultimately apparently healthy offspring. This is known as the law of Kassowitz. Actually, in practice, it is rare to meet such family histories. The more usual story is for miscarriages to alternate with still births and living children or for all the children to be

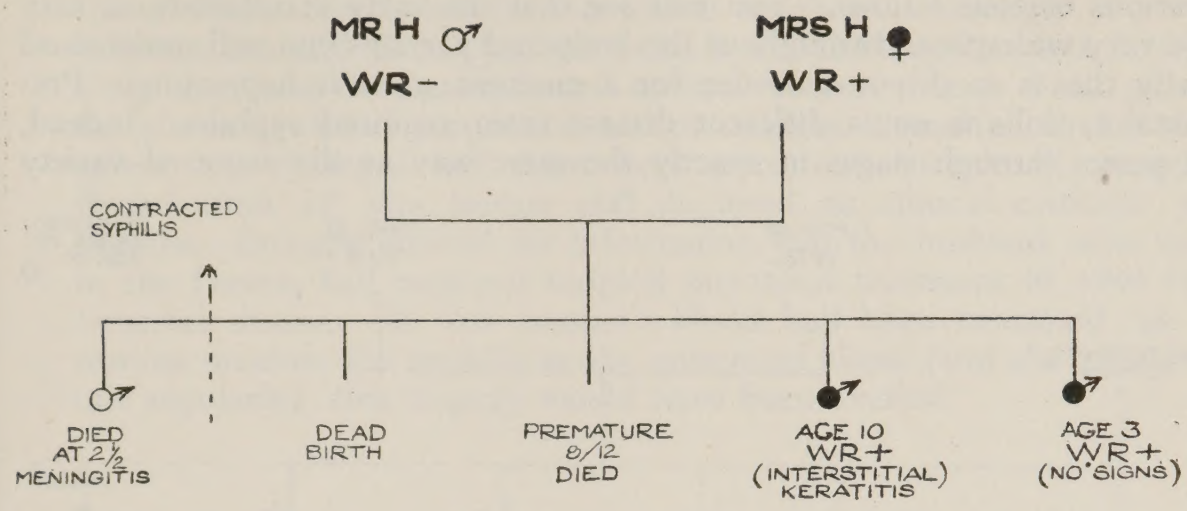

PLATE 2 ILLUSTRATING LAW OF KASSOWITZ

born alive and for some of them to show evidence of pre-natal syphilis and the others to be apparently normal. In these latter children one can find no clinical evidence of syphilis, and their blood tests are persistently negative. Even so, many authorities are of the opinion that these children, if observed for a sufficiently long period, will be found to develop signs of pre-natal syphilis and should, even in the absence of signs, be given treatment as soon as possible.

From what I have said already, it should be apparent that the mother of every pre-natal syphilitic child *must* herself be suffering from syphilis at the time of its birth.

The father may or may not be suffering from syphilis.

Colles' Law stipulates that the mother of a syphilitic child can nurse the child with impunity, without any danger of contracting syphilis from it, whereas others may be infected by it. When you realise that the mother is already infected the reason is obvious.

According to Profetas' law a syphilitic mother can give birth to a healthy child and can nurse that child without giving it syphilis. Whether this law is true or not is debatable. I have certainly seen several families in which some of the children are undoubtedly syphilitic, their brothers or sisters being apparently normal, and this would seem to illustrate the truth of the law. However, as I said previously, it has been pointed out that if these normal children are observed long enough they will be found ultimately to develop signs of pre-natal syphilis.

Clinical Signs of Pre-natal Syphilis.

The clinical signs of pre-natal syphilis can be divided into early and late and nowadays many more cases are to be seen in the latter category.

Early.

The early signs usually come on after the third week of life and include cutaneous eruptions, snuffles, irritability, restlessness, an aphonic cry, progressive loss of weight, enlargement of the spleen and liver and

various osseous lesions. You will see that the early manifestations may be very widespread throughout the body and perhaps you will understand why this is so if you consider for a moment what is happening. Pre-natal syphilis is not a different disease from acquired syphilis. Indeed, it passes through stages in exactly the same way as the acquired variety

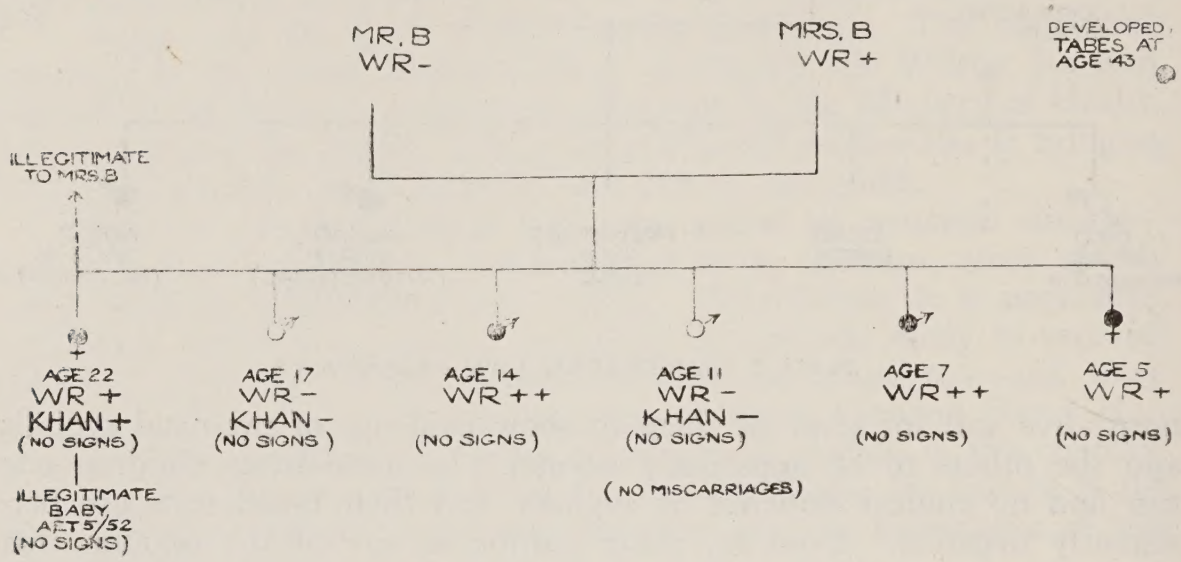

PLATE 4

and these early manifestations of pre-natal syphilis correspond to the secondary stage of the acquired variety with its well-known general constitutional disturbance, widespread rashes, and so on. The patient in both cases is really suffering from a syphilitic septicæmia. The spirochaetes have been widely disseminated throughout the body and all the different organs are reacting violently to the invasion. The only stage of syphilis that is absent in the pre-natal cases is the primary chancre and this is absent because at the time of infection the child is in the mother's uterus.

The rash in pre-natal syphilis usually occurs around the mouth, on the chin, and on the palms and soles. It is described as being the colour of copper or raw ham and it is almost always hard or indurated. An eczematous eruption at the angles of the mouth may lead to the formation of cracks which, when they heal, leave fissured scars and these may persist into adult life, giving rise to a classical sign known as "rhagades."

The following case illustrates most of the points met with in a case of early pre-natal syphilis and incidentally points a moral.

A woman aged 22 gave birth to a baby girl in June of this year. She had been quite fit throughout her pregnancy (which was her first) and had noticed nothing abnormal.

A week or so after birth the baby had developed a rash on the feet and hands, buttocks and face. The veins on the scalp were prominent and dilated and soon afterwards condylomata lata developed around the anus. The character of the rash led to an examination of

the mother's blood, which was found to show a strongly positive Wassermann and Kahn reaction (which was confirmed a week later). Only then was the case referred to the venereal disease clinic when the above signs had progressed and in addition it was found that the spleen was enlarged and there were mucous patches in the mouth. Examination of the mother still disclosed no clinical evidence of syphilis. Enquiry elicited the information that the husband, who was in the Forces, had received hospital in-patient treatment in 1944 for venereal disease. If this woman's blood had been examined as a routine measure for syphilis at the ante-natal clinic (and she attended one regularly), this tragedy would have been averted.

Late.

Most cases of pre-natal syphilis are discovered at a much later age in life. The discovery might take place quite accidentally when carrying out a routine blood test or by investigating the children in the family of a syphilitic woman. Perhaps the commonest sign of pre-natal syphilis with which patients come to the clinic for treatment are eye lesions and of these, interstitial keratitis accounts for the greatest number.

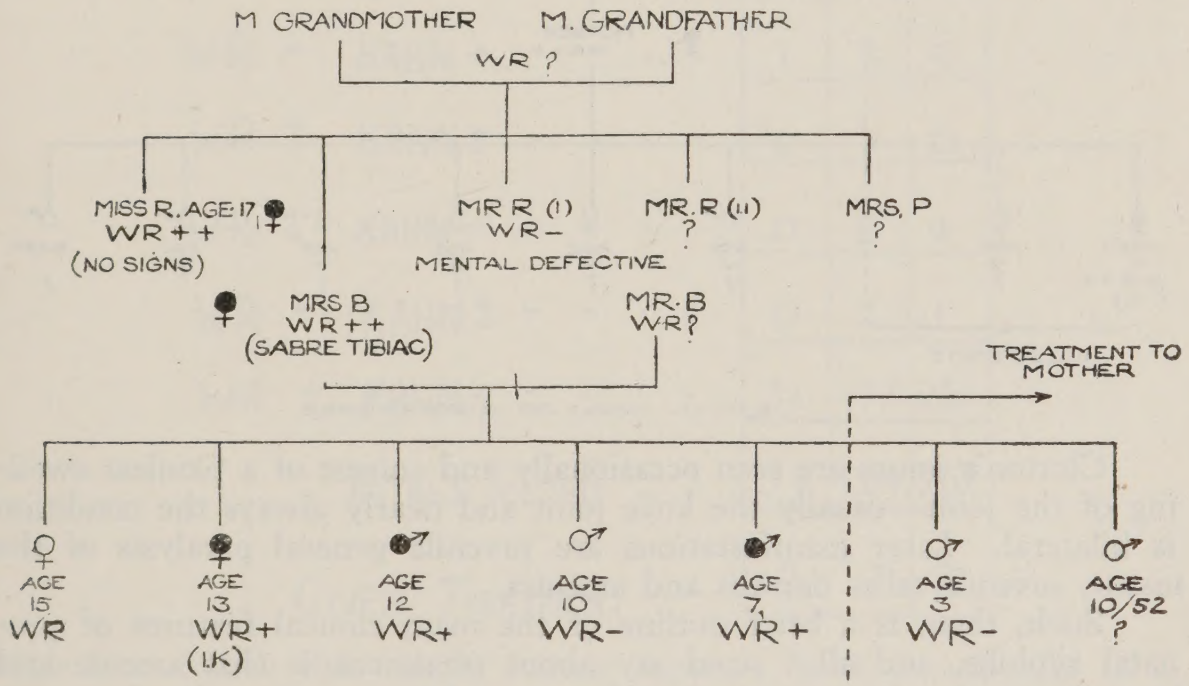

PLATE 28 – POSSIBLE 3RD GENERATION SYPHILIS

Why there has been this change in symptomatology of pre-natal syphilis during this last 30 years or so is not known with certainty. Nabarro has attributed it to the loss of virulence of the spirochaete consequent upon the partial treatment of the parents. Whatever the cause may be, it is true to say that the early manifestations are seen only exceptionally.

Perhaps the signs of late pre-natal syphilis with which you are most familiar are those which have become classical from the description of Hutchinson's famous triad. They are, saddle nose, Hutchinson's incisor teeth and 8th nerve deafness. It is true to say that to meet patients showing all these three stigmata is, in practice, a rarity. A school dentist practising for 13 years and through whose hands many thousands of schoolchildren have passed and who is quite familiar with Hutchinson's teeth, told me recently that he could not remember seeing more than two cases during this period.

Eye defects, such as interstitial keratitis and choroiditis are serious because they often cause permanent damage to vision with consequent inability to benefit at school or to support themselves in later life.

Do not forget that gummata can occur in pre-natal syphilis just as they do in the acquired variety and that they can occur in any situation in the body.

Osseous lesions are many and varied and give rise to such deformities as sabre tibia. They are due for the most part to a periostitis which leads to the deposition of new bone.

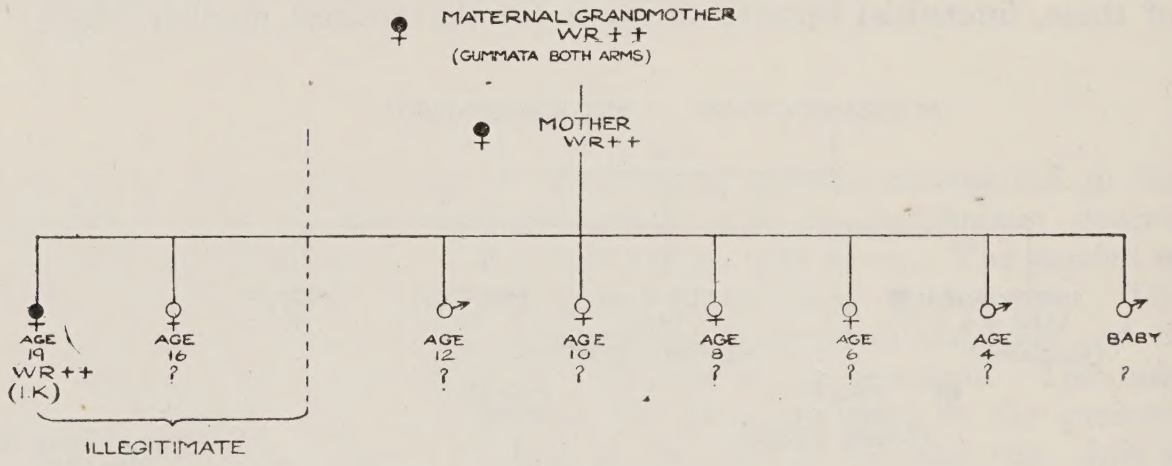

PLATE 27 – POSSIBLE 3RD GENERATION SYPHILIS

Clutton's joints are seen occasionally and consist of a painless swelling of the joint—usually the knee joint and nearly always the condition is bilateral. Later manifestations are juvenile general paralysis of the insane, juvenile tabes dorsalis and amentia.

Such, then, is a brief outline of the main clinical features of pre-natal syphilis, and all I need say about treatment is that arsenic and bismuth are the drugs used, that they must be given in a dosage appropriate to age and weight, that they must be given regularly and that they must be given for a sufficiently long period. Penicillin has been and is being tried in the treatment of these cases, but as yet it is too early to be sure of its true value.

Rather than talk to you about the treatment of pre-natal syphilis, I would like to stress the preventive aspects.

It is a sad reflection that in these days of enlightenment and progress so little has been done to prevent this easily preventible disease. The

abolition of pre-natal syphilis has been feasible for many years. If all pregnant women were tested for syphilis as early as possible in pregnancy and those who are positive treated throughout pregnancy, pre-natal syphilis would disappear. By this simple routine measure pre-natal syphilis in Sweden has almost been eradicated. It has been said that "any obstetrician or general man doing obstetrics should be held eminently liable for the birth of a syphilitic child if he has been lax enough to neglect the taking of a Kahn or Wassermann test when first consulted by the pregnant woman." That statement should be engraved on the minds of every medical man and woman in this country. The

C.B. of ROTHERHAM

Routine Ante-Natal Blood Tests.

MOTHERS WHOSE BLOOD SHOWED	1942	1943	1944
W.R. ++ KAHN++	2	7	2
W.R. + KAHN-	0	0	0
W.R. - KAHN+	1	2	0
W.R. ± KAHN±	0	1	0
W.R. ± KAHN-	0	5	4
W.R. - KAHN±	0	2	1
W.R. - KAHN-	31	177	251
TOTALS TESTED . .	34	194	258
GIVEN TREATMENT . .	2	7	2

neglect to follow this simple routine measure leads occasionally to a disaster such as the one I mentioned earlier. It is no use doing the blood test just before the confinement is due. It is important to stress the necessity of a blood test as early in pregnancy as possible so that, in the event of a true positive being recorded, treatment may be given before the spirochaete has had time to pass the placental barrier. That is why I said it was a matter of some importance to know when this event occurs and you will remember that I said it was probably during the fifth month. To be really successful, therefore, cases must be discovered before this time and treatment begun.

From all the evidence available it is probable that between one and two per cent. of all mothers give a positive Wassermann reaction and certainly our experience in Rotherham, though admittedly limited, supports this estimate.

In this country each year approximately 700,000 women become pregnant. Assuming that one per cent. of these women had a positive W.R. it would be theoretically possible for the annual occurrence of 7,000 still births and pre-natal syphilitic children. In actual fact, in 1943 only 310 cases of pre-natal syphilis in babies were recorded at venereal disease clinics. We know, of course, that every woman with a positive W.R. does not necessarily give birth to a pre-natal syphilitic child, but even making some allowance for this, you will see that many hundreds of cases of pre-natal syphilis must be born each year and many hundreds must escape diagnosis until the child has suffered some permanent damage.

There is one other rule that should be followed in these cases. Once a woman has suffered from syphilis—even though she has received full and efficient treatment—she must be given treatment throughout each succeeding pregnancy if she is to be given a full guarantee that the child will be born free from pre-natal syphilis.

Before leaving the subject of syphilis in children, there are two other aspects I would like to mention. They are, third generation syphilis and acquired syphilis in children. Both are uncommon, but do occur. This year I have seen two undoubted and a probable third case of acquired syphilis in children. It will be sufficient to give you the details of one of these cases.

In November, 1944, a man aged 22 years attended the clinic with a healing primary chancre and a fine widespread macular rash. The chancre was of three months' duration and the rash had been present for two weeks. The blood W.R. and Kahn reactions were both strongly positive. Enquiry elicited the information that he was cohabiting with a woman whose husband was abroad and that they both lived with the woman's married sister and husband. The latter had one child, a girl aged six years. The patient's partner, aged 26 years, was persuaded to attend the clinic, and on examination was found to have a healing primary sore near the vulva, a mucous patch on the left anterior pillar of the fauces and pronounced occipital and posterior cervical adenitis. The blood W.R. and Kahn reactions were strongly positive.

In February, 1945, the female patient brought the little girl, aged six years, to the clinic with the story that for the last two months the child had had a rash on the chest and back and swellings in the neck. A few weeks previously she had been treated for "mumps." The woman suspected that the child might have acquired syphilis from her since they were in such close proximity in the home; they slept together, on several occasions the male patient had bathed the child and it was not uncommon for the child to use the aunt's towel. A few months previously the aunt had pulled out two of the child's

teeth with her fingers; the gums did not heal for three weeks. On examination the child had a diffuse morbilliform rash on the chest, abdomen and back; there was also enlargement of the posterior cervical and tonsillar lymph glands, with mucous patches on the fauces and a generalised thinning of the hair. Her blood Wassermann and Kahn reactions were both strongly positive. The child's parents were induced to attend the clinic and showed no evidence of syphilis. The blood Wassermann and Kahn reactions were negative in both cases.

There seems to be no doubt in this case that the child had acquired syphilis either from her aunt or from her aunt's male partner. You will note there is no history of a primary lesion in the child and this is the general experience in these cases of acquired syphilis in children.

Nabarro established the existence of third generation syphilis in this country in 1933 by his description of 16 families. In my own experience I have had no family in which third generation syphilis was absolutely certain, but I have had two families in which third generation syphilis was a distinct possibility.

Gonococcal Infections in Children.

There are two chief gonococcal infections in children—ophthalmia neonatorum and vulvo vaginitis. In both diseases the gonococcus is not the only causal organism; many cases are due to other micro-organisms such as the diphtheria bacillus, streptococci, staphylococci, etc.

Ophthalmia Neonatorum.

This is the only form of venereal disease which is notifiable and yet it is probable that in practice many cases escape notification. Ophthalmia neonatorum is defined as "a purulent discharge from the eyes of an infant commencing within 21 days of birth." Few pupil midwives seem to know this definition, possibly because they concentrate on the fact that they are required to obtain medical advice for infants suffering from sore or discharging eyes, however slight.

Various figures have been given of the number of cases of ophthalmia neonatorum considered to have a gonococcal causation. Some authorities put it as high as 60 per cent. and others as low as 20 per cent. If every discharging eye were investigated bacteriologically, as it should be, our information would be more certain.

As you probably know, ophthalmia neonatorum accounted in the past for some 40 per cent. of all blind persons. In these days, of the 5,000-6,000 cases of ophthalmia neonatorum which are notified each year, there are probably less than a dozen resulting in blindness. Much of this improvement has been due to the improved conduct of labour and the prophylaxis of the newborn baby's eyes with silver nitrate. At the same time it should be realised that this prophylaxis has probably resulted in the masking of many thousands of cases of gonorrhoea in women.

The things I would like to stress in ophthalmia neonatorum are, firstly, that a swab should be taken in every case of eye discharge and examined bacteriologically, and in the event of showing gonococci both mother and child should be treated in hospital. Secondly, any woman who has a vaginal discharge during pregnancy should be thoroughly examined and, if necessary, treated. Both these statements seem fairly self-evident and yet in practice they are rarely followed. Quite recently, on informing a general practitioner that a pregnant woman's husband was attending the venereal disease clinic with gonorrhoea, his only remark was, "By Jove, I must see that the baby's eyes have some silver nitrate!" No suggestion, you see, that the woman should be investigated forthwith !

Vulvo-vaginitis.

In the short time at my disposal I cannot go into the details of vulvo-vaginitis in children and will confine my remarks to the salient features. Not all cases of vulvo-vaginitis are gonococcal in origin, but the non-gonococcal forms are easily and rapidly cured whereas the gonococcal cases are often difficult to cure—there being a tendency for repeated relapse in these cases. Few gonococcal infections are acquired in a venereal way. Infection is usually through fomites or via lavatories. It does not occur within the first few weeks of life, probably because the vagina at this time is lined with a stratified type of epithelium. Later this is replaced by a columnar type of epithelium which is much more easily attacked by the gonococcus.

Gonococcal vulvo vaginitis occurring in a children's institution may spread with great rapidity and drastic and energetic action must be taken in these outbreaks.

With regard to treatment, the sulphonamides given in a dosage corresponding to the child's age produce excellent results. There is no necessity for interfering local treatment. All that is required is a daily sitz bath and scrupulous local hygiene. The less manipulation of the vulva the better.

Conclusion.

In conclusion, I would like to stress the following points.

A blood test for syphilis should be done on every pregnant woman as early in pregnancy as possible. Any positive reactor should be thoroughly investigated and if proved syphilitic should be given thorough treatment. Any woman who has had syphilis, even though thoroughly and adequately treated, should receive treatment throughout every subsequent pregnancy.

A pregnant woman who has a vaginal discharge should be thoroughly investigated clinically and bacteriologically. A swab from every case of ophthalmia neonatorum should be examined bacteriologically and in the event of it showing gonococci both mother and father should be thoroughly examined and treated.

There are probably few of you here to-day who work in a venereal disease clinic and you may be wondering how venereal disease in children is any concern of yours except from the point of view of academic interest. I assure you that you can play a very valuable part in the venereal disease service in this country provided you are armed with a sound background of knowledge. Your role is twofold. Firstly, to educate mothers on the importance of seeking medical attention as early in pregnancy as possible, and secondly, to make mothers understand the importance of a routine investigation for syphilis. Both objects are often difficult to carry out in practice and require a good deal of tact. It should be possible by persevering educative efforts to make mothers demand a routine ante-natal blood test as a right rather than be persuaded to accept a test as a favour to the ante-natal doctor. Some of you may be fortunate enough to work in an area where venereal disease in mothers and children is treated at the maternity and child welfare clinic instead of the venereal disease clinic. This policy has received the blessing of the Ministry of Health, but is not always easy to carry out in practice. It necessitates either the venereal disease medical officer also being a child welfare officer or a high standard of knowledge and training in venereal disease on the part of all child welfare officers. In any case the vast majority of mothers will be found non-syphilitic, and it is only the odd one or two per cent. for whom provision must be made.

You may say, perhaps, that if a mother has a blood test as early in pregnancy as possible, she may be missed by contracting syphilis later on in pregnancy. This is quite true and does happen but so infrequently that serial blood tests throughout pregnancy is not a practicable proposition.

One final point. While opinion is still divided on the compulsory treatment of venereal disease in adults, I can see no valid argument why the treatment of venereal disease in children should not be made compulsory. I remember a school girl who suffered from a gummatous ulceration of the fauces for nine months and whose father refused to allow anti-syphilitic treatment. He was quite prepared to allow any amount of local treatment, but not injections. By chance she was admitted to hospital and treatment was given forthwith. However, she could not be kept in hospital indefinitely, and after being discharged she was not allowed to receive any further treatment. There was no law that could compel the father to continue having the child treated. Why should the children be made to suffer for the past commissions and omissions of the parents?

THE PORT HEALTH AUTHORITY

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IT is surprising how little the ordinary members of the public, even those who live in seaports, know of the work of Port Health Authorities, and yet our national prosperity, our influence in world affairs, our very existence in times of war, are dependent on sea-going traffic and on the efficient running of the various services in our ports.

The work of a Port Health Authority is concerned with four main problems:

(1) To prevent the entry into the country of infectious diseases, a danger which is always present since an enormous volume of shipping comes to our ports from all four quarters of the globe.

(2) To exclude, by medical inspection of all aliens, the possibility of infection being introduced by the large number of these persons who arrive in this country each year.

(3) To ensure that the vast quantities of imported foodstuffs on which we so largely depend are of suitable quality and freshness when they arrive in this country.

(4) To supervise the living conditions of crews on board ship, and this, though last on the list, is by no means the least of the duties of the Port Health Authority.

Infectious Disease.

Of these four functions of a Port Health Authority, the most important is to prevent the importation into the country of infectious disease; and if prevention is to be effective, two things are essential. Firstly, there must be knowledge of the countries and ports where infectious disease exists, and, secondly, preventive measures must be taken at the port from which a vessel departs as well as that at which it arrives, the nature of the measures varying according to the disease. Clearly, therefore, the control of seaborne infection is a matter for international co-operation and for the full exchange of information between nations, for their mutual advantage, of the occurrence of infectious diseases within their borders.

International Sanitary Conferences have been held from 1851 onwards to devise for the consenting countries uniform methods for the control of imported disease, the object being to obtain security without unnecessary interference with trade, and the results of these deliberations are formulated in a series of International Sanitary Conventions.

At a Conference held in Paris in 1903, it was proposed that an International Public Health Office should be created, and an agreement between the different governments was eventually signed in Rome in 1907. The agreement provided for the establishment of headquarters in Paris and for a permanent committee, comprising public health representatives from the various governments, to meet at least once a year to discuss questions of international importance. A monthly bulletin indicating the prevalence

of infectious disease throughout the world was issued from the International Public Health Office in Paris, and later the Office was incorporated in the Health Section of the League of Nations.

An International Sanitary Convention signed in Paris in 1926 requires governments to make immediate notification of all outbreaks of infectious disease to the International Office, which will have the duty of circulating the information.

The various International Sanitary Conventions have been concerned with the measures necessary to prevent the spread of the five major infectious diseases, plague, cholera, yellow fever, typhus and smallpox, each of which is normally confined to certain restricted areas and could only become of world-wide distribution as a result of shipborne infection.

Since 1919 the administrative officials of the British Empire and the consular service at ports in foreign countries report the first occurrence within their districts of any of the five major infectious diseases and thereafter reports are sent as long as the prevalence lasts. Weekly or fortnightly returns of notified infectious diseases are also received direct from the Public Health Services of various countries and information obtained from the foreign press, medical and lay. From these sources the Ministry of Health prepares a weekly record showing the prevalence of the five major infectious diseases in the various ports throughout the world, and the records are issued to all Port Medical Officers.

From the monthly bulletin of the International Public Health Office and the weekly report received from the Ministry of Health, the Port Medical Officer prepares a list of "infected areas," that is, of areas in which one or more of the major infections are prevalent, and vessels which have called at any port in these areas are subjected to special measures on arrival at a British port. A copy of this list is supplied to all Pilots and Customs Officers.

The main provisions of the Port Sanitary Regulations (1933) are as follows:

The master of every ship coming from a foreign port must notify the Port Health Authority if there is on board any person suffering from symptoms suggestive of infectious disease, notification being made by wireless and indicating the possible time of arrival of the vessel.

On arrival in port the master of every vessel coming from a foreign port must fill in a Declaration of Health stating whether there is, or has been on board during the voyage, any case of infectious disease and whether there has been an unduly large number of deaths among the rats which ordinarily infest all ships. The declaration, signed by the master and countersigned by the ship's surgeon (if any), is handed to the Customs Officer or Port Medical Officer, whichever is first on board the vessel. In this way responsibility is placed on the master of informing the Port Health Authority of any case, or suspected case, of infectious disease among the passengers or crew, whether it has occurred during the voyage or is still sick at the time of arrival.

To prevent the spread of infection to the shore, the Regulations make it an offence for any unauthorised person to board or leave a vessel until

it has been cleared—authorised persons include Pilots, Customs Officers, Immigration Officers and Officers of the Port Health Authority.

The Port Health Authority must also designate a mooring station within the docks in which any vessel on which one of the major infectious diseases has occurred may be moored without coming into contact with other ships or with the shore.

So that all contacts of cases of infectious disease may be kept under observation, the Port Medical Officer may require the name and destination of all persons leaving the ship and may also require such persons to inform him of any other address at which they arrive within the following fourteen days. This information is forwarded to the Medical Officer of Health of the area in which the person is going to reside.

Air travel, which will become increasingly popular as time goes on, will undoubtedly assist in the spread of infectious disease. An infected person will, in many instances, have completed his journey by plane during the incubation period of the disease and landing several days before the onset of illness, he may well be the means of starting an epidemic. During the slower passage by sea he would have sickened on board ship and the condition would have been discovered.

Effective measures to prevent the importation of infection by air can only be taken at the port of embarkation.

At this point it is necessary to deal more particularly with the five major infectious diseases and with the measures adopted to prevent their spread. The diseases, as already mentioned, are plague, cholera, yellow fever, typhus and smallpox.

Plague.

Incubation period two to eight days. Plague, like other infectious diseases, may occur in epidemic form, in the course of which the disease may become extremely virulent, the death rate in some epidemics being as high as ninety per cent.

There are two main types of the disease:

(1) *Bubonic Plague.* This is by far the more common form and is characterised by swelling of the lymphatic glands, most commonly in the groin. During an attack there is intense thirst, the skin is parched and the eyes sunken. The temperature may reach 107° F. Later the patient becomes delirious. The case mortality is sixty per cent.

(2) *Pneumonic Plague.* This form is a pneumonia in which the constitutional upset is out of all proportion to the physical signs in the chest. There is copious blood-stained sputum and the patient becomes delirious at an early stage. The case mortality in this form of the disease is 98% —100%.

The cause of plague was discovered during an epidemic of the disease in Hong Kong in 1894 to be an organism now known as the Bacillus pestis.

Plague is primarily a disease of rats, and is conveyed from rats to man by fleas.

The Plague Commission of 1908, investigating Bubonic Plague, stated *inter alia*:

(1) Bubonic plague in man is entirely dependent on the disease in rats.

(2) The infection is conveyed from rat to rat and from rat to man solely by means of fleas.

In pneumonic plague the disease is spread from person to person by buccal spray.

The specific treatment of plague is by repeated intravenous injections of anti-plague serum, for which good results are claimed. An effective vaccine is available for the protection of those living in plague-infected areas.

Epidemics of plague have occurred from the very earliest times and the disease has taken heavy toll of the population throughout the entire world. During the fourteenth century a vast outbreak, the Black Death, overran Europe and destroyed a fourth of the population. Thereafter epidemics of plague ravaged Europe for three hundred years, and during the great plague of London in 1665 some seventy thousand people died. During the eighteenth century the disease gradually disappeared from Europe, and in the first half of the nineteenth century it waned in non-European countries also. Unfortunately, in more recent times, epidemics, some of extreme virulence, have occurred in various non-European countries, and at present plague is prevalent throughout India, parts of China, parts of Africa—including Madagascar—Chile and Peru.

In this country, since 1900, cases have arrived on board ship at Glasgow and Liverpool, and a series of cases have occurred in Suffolk.

So long as the disease remains active in any part of the world it may spread to others, and plague has always gained entry to a country by way of the seaports.

As noted earlier, bubonic plague in man is entirely dependent on the disease in rats, and the spread of plague from one continent to another is therefore due to the rats which infest ships, and to prevent the invasion of a country by plague it is essential to keep the rat infestation of ships under control.

Under the Port Sanitary Regulations, all foreign-going vessels must be inspected at six-monthly intervals to determine their rat population. If no evidence of rats is found on board a ship, the Port Health Authority issues a Deratization Exemption Certificate. If there is evidence of rats on board, the Port Health Authority orders fumigation of the vessel, and when this has been satisfactorily carried out a Deratization Certificate is issued. Both types of certificate are valid for six months.

A much more effective method of control is the rat-proofing of ships, which denies the rat harbourage, food and water. A number of ships built over the past few years have been rat-proofed, but the cost of proofing the majority of vessels afloat would be prohibitive. Unfortunately there is no legislation which requires newly built vessels to be rat-proofed. If a vessel arriving in port is actually found to have a case of plague on board, the patient should be removed to hospital and strict observation kept on all on board. The vessel, while berthed at the mooring station, should be fumigated with hydrogen cyanide to destroy the rats on board before the unloading of cargo begins, and a second fumigation should be carried out

after discharge has been completed. Efficient rat guards must be placed on all mooring ropes and hawsers and all unnecessary gangways lifted at night, the necessary gangways left in position being well lighted.

Cholera.

Incubation period two to five days. The symptoms of cholera are striking. There is profuse vomiting and purging, the stools soon becoming of a pale rice water character. The system rapidly becomes dehydrated and the skin cold and wrinkled and severe muscular cramps ensue. Cyanosis is frequent. The average case mortality is fifty per cent.

The causal organism of the disease is the vibreo cholerae, which invades by way of the mouth. The infection is most commonly water-borne, but may also be conveyed by foodstuffs. The infective sources are most commonly ambulant cases of the disease and convalescent carriers.

The most effective treatment is by potassium permanganate pills and intravenous hypertonic salines, and anti-cholera vaccine has proved efficient.

Cholera has long been endemic on the lower Ganges and Brahmaputra, but during the nineteenth century it spread beyond the confines of India in five great pandemics, during which the death roll was extremely high. The first was mainly confined to Asia, but the remaining outbreaks involved Europe, this country being invaded during the second, third and fourth.

Cholera has not recurred in the west in the present century, but it remains endemic in parts of India and China.

The International Sanitary Conventions of 1926 and 1944 encourage anti-cholera inoculation at ports of departure in cholera-infected areas, and in the Far East cholera inoculation is held to be of great value.

Measures for the prevention of the spread of cholera are, isolation of the patient in hospital, control of contacts and the discovery of carriers by bacteriological examination of the faeces and the protection of food and water supplies. Cholera being most commonly water-borne, the water supply should be examined and, if found to be infected, the water tanks should be emptied and lime-washed.

Yellow Fever.

Incubation period of three to six days. The onset of yellow fever is sudden, with soaring temperature, severe headache and racking pains in the back and loins. Jaundice develops, whence the descriptive name, and is accompanied by haemorrhages from the stomach (black vomit), nose and mouth. The case mortality varies in different outbreaks and may be as high as eighty per cent.

The causal organism of yellow fever is a filter-passing virus, the disease being conveyed by the mosquito Aedes aegypti.

Yellow fever is essentially a disease of tropical climates, seldom extending beyond latitudes 40° N. and 20° S., and is limited to certain countries in South America and that part of Africa lying between the above latitudes. The presence of yellow fever in the West Indies and West Africa is a legacy of the slave trade, and which of the two infected the other is still in dispute.

Aedes aegypti is distributed in every continent between latitudes 40° N. and 40° S., and it is therefore possible for yellow fever to spread to parts of Asia and Australia, from which an indigenous case has never been reported, and to Central America and the Gulf States of North America, which suffered severely from the disease during the last century. The risk of yellow fever spreading has been very much increased due to air travel, as a result of which an infected person could be landed in another country with the onset of his illness still some days ahead.

Fortunately, although a person incubating yellow fever could be landed in this country before he showed any symptoms, the disease could not spread as the mosquito concerned does not survive in Britain.

Under the International Sanitary Convention of 1944, definite obligations are imposed to keep aerodromes free from mosquitoes, and disinfestation of aircraft is made obligatory in certain areas. Anti yellow-fever inoculation is urged for all persons at risk.

Typhus Fever.

Incubation period of ten to fourteen days. Typhus fever is mainly a disease of temperate climates, occurring chiefly in winter and spring, and its spread is favoured by general uncleanliness, overcrowding and malnutrition.

The disease has a sudden onset, with headache and vomiting. The eyes are pink and watery and almost from the onset of the illness the mind is confused. On the fourth day of illness the characteristic rash appears, a dusky red mottling the tint of a mulberry with red spots not unlike those of typhoid fever. There is extreme muscular prostration, the patient becoming wildly delirius, almost maniacal, and death may occur from exhaustion. In those cases which recover the crisis occurs about the fourteenth day.

The average case mortality is twenty per cent., but in some epidemics it may reach a much higher figure.

Typhus fever is due to a minute organism, the Reickettsia prowazeki, and is transmitted by the louse.

Typhus fever first invaded Europe, from the Middle East, towards the close of the fifteenth century, and since then it has never been entirely eradicated, being still endemic in parts of Poland, Russia and the Balkans. A disease of crowded insanitary towns, it has prevailed extensively in all the large cities of Great Britain and the continent. As goal fever it occasioned the six Black Assizes of England, and in the course of the nineteenth century there occurred in the British Isles six major epidemics, the last in 1862. Since then typhus has been of rare occurrence in England.

Epidemics are particularly liable to occur during periods of war and famine, and as camp fever it has been an accompaniment of every major war. During the present war it has spread from its endemic centres throughout the German Reich and the major part of Europe.

The delousing of the patient and all contacts and the disinfestation of all clothing and bedding are the essential features in the control of typhus fever. The patient should be isolated in hospital and contacts kept under observation for a period of sixteen days.

Under the International Sanitary Convention (1944), governments are urged to adopt anti-typhus immunisation for the protection of persons at risk and to ensure that ships trading in areas in which typhus is endemic carry a sufficient quantity of an effective insecticide.

Smallpox.

Incubation period ten to fourteen days. There are two varieties of the disease.

(1) *Major smallpox* is generally a most formidable disease. In most cases the onset is abrupt with severe headache and pain in the back together with a rise in temperature. The characteristic rash appears on the third day, is accompanied by a fall in the temperature and the patient usually feels better at this stage. The eruption, which presents the four successive stages of papule, vesicle, pustule and crust, is more abundant on the face and extremities than on the trunk. The rash is deep seated, the papules being described as "shotty" to the touch.

In one type of the disease, haemorrhagic smallpox, there is a petechial eruption, especially on the trunk and upper part of the thighs, and such cases are nearly always fatal.

In another type, confluent smallpox, the lesions run together, and again the case usually terminates fatally.

Modified attacks of the disease occur in vaccinated persons whose immunity is weakening with the lapse of time, but in these cases the eruption is scanty.

(2) *Minor smallpox* is a form of the disease well known in England during the past twenty years. It is much less severe than major smallpox, the mildness of the constitutional disturbance being in striking contrast to the profusion of the skin eruption.

The causal organism of smallpox is a filter-passing virus, and infection may be by contact with a patient suffering from the disease or through the medium of objects infected by the sick person, e.g., bedding, clothing, etc.

Smallpox, formerly prevalent in this country, declined following the discovery of vaccination by Jenner in 1796, and is now a rare occurrence.

The endemic centres of major smallpox are India, the Sudan and North Africa.

The control of smallpox depends on the vaccination of all contacts. The patient should be removed to hospital and his quarters, bedding, clothing, etc., disinfected. All persons on board the ship concerned should be offered vaccination, although no compulsion can be exercised should any person refuse, and a daily visit should be paid to the vessel for sixteen days after the removal of the patient to hospital, or until the vessel leaves port.

It is not contended that the various procedures outlined above will prevent entirely the entrance through the ports of all cases of infectious disease, but the methods employed—substantially the same for the past half-century—have proved eminently successful. At the same time no unnecessary restrictions have been imposed on the movements of persons or of shipping.

Immigration and Emigration.

Each year many thousands of immigrants arrive in this country, and arrangements have to be made to prevent the immigration of persons who may endanger the health of the public or who, by reason of lack of money, disease or of physical or mental defect, may become a charge on the country.

The Aliens Order of 1920 defines the classes of persons who are prohibited from entering the country, and provides for the examination, medically or otherwise, of immigrants to discover whether or not they come within any of the prohibited classes.

Imported Food.

Great Britain, more than any other large community, is dependent on imported foodstuffs which are brought from all over the world, and strict supervision must be employed to ensure that these foodstuffs are wholesome and of good quality. The duty of ensuring the soundness and freedom from disease of all imported foodstuffs intended for human consumption is placed on the Port Health Authority.

Living Conditions on Board Ship.

The sailor is subject to health hazards which do not affect persons living ashore. He is frequently exposed to cold and wet, and in the tropics must endure excessive heat. His water supply has often to be replenished from doubtful sources, his accident rate is higher, and in the course of his voyaging he is exposed to many exotic diseases. In addition, his living accommodation on board ship is necessarily restricted and the provision of amenities which on shore are regarded as essential is often difficult.

The supervision of the health of merchant seamen is the responsibility of two bodies, the Board of Trade and the Port Health Authority.

The Board of Trade administers the Merchant Shipping Acts, which lay down minimum standards for crews' accommodation and a minimum dietary. The Port Health Authority is responsible for ensuring that crews' quarters are maintained in a proper state of cleanliness, that they are free from infestation with vermin, e.g., bugs, cockroaches, lice, etc., and that there are no accumulations of refuse on board. Attention is also paid to the ventilation, heating and lighting of quarters, to the facilities provided for washing and to the sanitary arrangements. The existence of any nuisance on board is brought to the notice of the master, and this is usually sufficient to ensure that the matter is remedied. If structural alterations are required the Board of Trade is informed of the circumstances.

From the various facts which have now been put before you, you will realise that constant watch and ward is kept along the whole of our coastline and the banks of our navigable rivers to eliminate any danger to the health and well-being of the community from any vessel arriving in this country and that endeavours are being made to improve the lot of the merchant navy, on whose efficiency we as an island people must so greatly rely.

THE INFLUENCE OF MATERNAL NUTRITION ON THE HEALTH OF MOTHER AND CHILD

By Miss G. GRIFFITH, M.D., F.R.C.S., M.R.C.O.G.,
Obstetrician and Gynæcologist.

A CONSIDERABLE amount of research work was being done on this important subject before the war. It became an even still more important subject during war-time, as the result of rationing of food in order that the pregnant woman should obtain a sufficiency of the essentials. In the past, one found that the diet of the pregnant woman became more deficient as the economic level went down, although even before the war, diets in general had much improved as the result of instruction given in ante-natal clinics, etc. War-time put everyone in the same category.

The fœtus is, of course, a parasite, taking all its requirements from the mother. This makes it essential that we should see that the growing fœtus obtains the material necessary for growth and for the healthy formation of bones and teeth, without extracting too great a toll from the parent host.

Any deficiency of diet, therefore, becomes more serious when pregnancy intervenes, although it is rare to find the extremes of deficiency in pregnancy as seen in such diseases as beri-beri, pellagra, scurvy, etc. Nevertheless, the deficiency is often sufficient to produce various symptoms, such as nausea and vomiting in early pregnancy, easy fatigability, and numbness and cramp in late pregnancy, which are due to deficiency of Vitamin B.

There are, of course, different levels of nutrition. There is the minimum necessary for life; there is a level adequate for health; and an optimum nutrition level. We should, at least, aim at one adequate for health. Such a diet should provide protective, energy-giving and regulatory constituents. It should have the ingredients so balanced that no drain is placed on body tissue ; it should provide for the growth of the woman's body as pregnancy advances, and, while providing the fœtus with material for growth, still be sufficient to put aside a reserve for the work of labour and for lactation. What diet should we advise for this purpose and how educate the woman to it? It is no use vaguely telling her to drink plenty of water and eat vegetables and go easy on starches and meat ; it is no use telling her that she needs 1 gram of calcium a day. She must be told to drink a quart of milk every day. We shall first of all see, then, what the pregnant woman does require.

The actual calorie value of her food varies according to the weight of the person and the work she is doing. An average value is about 2500 calories. It is prudent to restrict weight gain during pregnancy to about 20 to 25 pounds, although this can be exceeded in women who are below their average weight before pregnancy and correspondingly restricted in those above by increasing or decreasing the calorie value of the food. These calories should be well distributed over a varied

diet so that all the essentials are contained — namely, protein, fats, carbohydrates, calcium, phosphorus, iron, iodine, and the vitamins.

Protein, both animal and vegetable, in quantities of 80 to 100 grams daily is at long last recognised as an essential for the obstetric patient. Many obstetricians still continue to give a full protein diet even in the presence of toxæmia of pregnancy, as albuminuria cannot be prevented where there is kidney damage by the cutting down of meat from the diet. It will still appear as the result of the breakdown of the body tissues, and a deficiency of first-class protein is harmful both to the mother and the fœtus. In the mother it will result in anæmia, loss of muscle tone, œdema and lowered resistance, and poor milk supply. In late pregnancy, the body stores over 100 grams of protein daily in anticipation of labour and lactation. The two sources of protein—namely, animal and vegetable—should be combined. The animal source—namely, meat, milk, cheese, eggs and fish—should be about 60 per cent, and the vegetable—such as peas, beans and lentils—about 40 per cent. A high-protein diet in the expectant mother is believed to raise the prothrombin and fibrinogen content of her blood and so protect against hæmorrhage.

Fats are required in quantities of 80 to 100 grams daily. Fats give energy, and are important as a carrier of essential vitamins. From observations carried out, it appears that the quantity of fat in the diet varies very little, even in poorer women, in contradistinction to protein, which they cannot afford to buy. Butter may be regarded as the best fat. Excessive fat intake has been suggested as a cause of eclampsia.

The carbohydrate makes up the main bulk of the diet, and is the basic food element which allows greatest latitude in varying consumption to control adequate calorie intake. The amount required varies from 100 to 300 grms. daily. Their intake must be carefully controlled, for an excess of carbohydrates leads to a diminished intake of proteins and vitamins. Excesses in carbohydrates lead to an unhealthy gain in weight. One of the most frequent forms of carbohydrates used in excess in the diet of pregnant women, especially in war-time, is white bread, which is cheap and bulky. There has been insufficient insistence on the use of whole-grain bread instead of white bread. A slice of whole-wheat bread contains a greater value in calcium, phosphorus, iron and vitamin B, although it has the same calorie value. In the milling there are lost important elements, such as vitamin B, vitamin E and certain blood-making factors.

Calcium intake in pregnancy should reach levels of 1.5 grms. to 2 grms. daily towards the end of pregnancy. Deposition of calcium in the fœtal bones begins at the fourth month and continues to term with increased demands from the seventh month, so that at term the fœtus contains approximately 24 grms. of calcium. Dental authorities do not believe that this demand on the mother produces dental decay in her, as was formerly thought, but it is recognised that marked calcium deficiency may lead to post-partum hæmorrhage due to uterine atony.

The basic source of calcium in the diet should consist in a daily quart of milk, which contains 1.15 grms. of calcium. Skimmed milk is as good as whole milk. The remaining calcium needs are supplied in other dairy products. If milk cannot be taken, then it is given in commercial preparations. Vitamin D is necessary for the proper utilisation of calcium and prosphorus in the body, and as the presence of vitamin D depends on sunshine, this, then, is also necessary, even although there is a high intake of calcium and phosphorus. Insufficient calcium leads to cramps in the legs, headaches and insomnia.

Phosphorus is widely distributed in an average diet containing milk, eggs, meat, fish and cheese. There should be a proper ratio of calcium to phosphorus, namely, 1 to 1.5, and again vitamin D is necessary for its proper utilisation.

Iron intake should be 20 to 30 mgms. daily. At term, there is 900 mgms. present—in the fœtus 400 mgms. and in the placenta 500 mgms. The increased fluid content of the blood in pregnancy leads to a diminution of hæmoglobin, which has been called "the physiological anæmia of pregnancy." It is common to find hæmoglobin readings of less than 70 per cent. in pregnancy, and these deficiencies should be made good by giving extra ferious sulphate, checking results by repeated hæmoglobin estimations if possible. Iron is found in beef, liver, egg yolk and in leafy vegetables. The use of coarsely ground wheat cereals and flour also adds to the storage of iron.

Iodine is contained in fish, so that there should be sea foods at least once a week. A deficiency affects both reproduction and lactation.

Water helps to regulate the diet generally. About 1 c.c. is required for each calorie of diet, and with an average diet this works out about 2 quarts a day. The more fluid the diet, the less need be taken. When œdema arises in pregnancy, nephritis must be looked for, nutritional œdema ruled out and a water balance established, intake being measured to approximate output, changing the amount daily as required. The average output of urine daily is 3 pints. Under these conditions, it is wise to limit the amount of sodium chloride in the diet. The sodium helps to retain water in the tissues It is enough for there to be salt in the cooking—no extra salt should be taken with the diet. It is said that cutting down salt leads to a shorter and easier labour, owing to dehydration of the cervix and uterus and more efficient contraction.

The daily requirements of the vitamins are difficult to estimate, because of the multiplicity of their effects. They are estimated on the smallest amount necessary to prevent visible symptoms, plus an added safety factor.

Vitamin A is soluble in fat. It is found in halibut and cod-liver oil, butter, milk, cream, and egg yolk and green vegetables. It is estimated that 6000 to 9000 international units are required daily. Presence of this vitamin promotes growth, prevents infection and promotes reproduction. Its effect on visual purple is well known.

Vitamin B is a complex of many factors. B1 or thiamine chloride is soluble in water and is easily destroyed by cooking, as it is susceptible

to heat. Insufficiency of thiamine chloride will cause undue fatigue, loss of appetite and other gastro-intestinal upsets, headaches and mild neuritis. The daily requirement varies between 1 and 1.8 mgms. of thiamine chloride (300 to 1200 international units B1).

Vitamin C requirements are met by an intake of 1500 international units or 50 to 100 mgms. of ascorbic acid daily, or roughly about three medium-sized oranges. It is found in raw vegetables and the citrus fruits. It is concerned with the cementing of intercellular material, and, therefore, is necessary to promote good tooth and good bone formation and to prevent scurvy. Lack of it is said to predispose to brain hæmorrhage in the fœtus. Dentists lay as much stress on the presence of vitamin C in the diet as calcium for good teeth in the mother, and the sore gums or acid mouth of the pregnant woman is an indication of its deficiency.

Vitamin D is soluble in fat, like A, and is found in fish-liver oils, milk, and egg yolk. In addition to mobilising calcium and phosphorus, it aids in preventing fœtal rickets. Because of its control of calcium metabolism, it also helps in preventing P.P.H. It is made in the body from ergosterol, which needs sunshine to activate it, and vitamin D can be stored in the tissues, unlike vitamin B, which needs to be taken daily. The requirements are about 600 to 1000 international units daily, but this has not yet been properly worked out.

Vitamin E, the fertility vitamin, is present in wheat-germ oil and lettuce. It may be added to the diet in abnormal cases, as habitual abortion, or repeated premature labours, or in a patient pregnant after a long sterile period.

A pregnant woman, then, should be advised to include the following in her daily diet: 1 quart of whole milk, 2 oranges (or orange juice) or stewed prunes or tomato juice, 1 egg, whole-grain bread or cereal, 2 tablespoonfuls of butter, 1 serving of meat, fish, poultry or cheese, with liver once a week, 1 or more cupfuls of fresh vegetables, including one green, as well as potato. From the nutritious point of view, liver is the richest of all meats. It is an excellent source of vitamins A, B and C, and iron, as well as its protein food content. The mother should be warned against the overcooking of green vegetables or the addition of an alkali to the cooking water, both of which destroy vitamin B. Refinement is the enemy of vitamin B (thiamine).

Diet sheets have of course been worked out for the pregnant woman, giving the calorie value of the food. I do not propose to go into detail on this, as I think that they will depend on the food available according to the season of the year. Also, no useful purpose is served by committing them to memory. A suggestion for a sample day's diet is as follows:

BREAKFAST.—Orange (or orange juice or stewed prunes, etc.), oatmeal with whole milk, toast and butter, and one cup of tea, coffee or whole milk.

DINNER.—Pot roast of beef or other lean meat, beans or carrots or other vegetables, baked potatoes, glass of whole milk, baked custard.

SUPPER.—Cheese or egg dishes or fish, green salads, whole-wheat bread and butter, stewed fruit and one cup of cocoa made with whole milk. Extra milk may be taken before bedtime.

This diet will be found to be deficient in iron, but it can be made up by including a liver ration twice a week. It will also be necessary to add extra vitamin D.

One of the largest surveys of the diet of pregnant women, and the effect of the addition of extra vitamins and minerals, was carried out before the war by the People's League of Health. The survey was not completed owing to the war, but an interim report was published which is very instructive. Study was made of the records of 5022 women attending the ante-natal clinics of various London hospitals. Before making additions to the diet, an attempt was made to find out their deficiencies by means of questionnaires. It was found that there was no well-marked deficiency of first-class protein. As regards minerals, a shortage of calcium was noted in about 70 per cent. of women, most of whom were consuming insufficient milk and cheese. Iron insufficiency was even more serious, only 2 per cent. of the women having a satisfactory intake. As regards vitamins, the deficiency of A was the most common, more than half the women taking less than they needed. Generally speaking, the diets were not badly defective in vitamin B, but nearly half the women were not taking as much as was desirable. Vitamin C shortage also affected about half the women. But the general impression was that the women were not as badly fed as was expected from previous surveys, and appeared to have been helped by the ante-natal teaching given to eat fresh fruit and eggs and drink milk. After this preliminary study, the women were divided into two groups, half being given extra supplements and the other half used as controls. They were given extra iron (as iron carbonate), extra calcium (as calcium lactate), minute quantities of iodine, manganese and copper, a vitamin B preparation (containing all the vitamin B complex), vitamin C (ascorbic acid), and halibut liver oil (vitamins A and D). Statistics were then made in each group, showing the effect on the mother and child. It was proved that there was a marked beneficial effect in the lowering of the incidence of toxæmia of pregnancy, especially in primipara, by the giving of these extra minerals and vitamins. When it is remembered that next to puerperal sepsis, toxæmia is the most important cause of maternal mortality, in addition to being one of the most fertile sources of chronic ill-health after childbirth, the findings become significant.

More marked still are the effects on the infant. The chances of a mother carrying her child to term are improved by the diet. The incidence of prematurity is higher in the untreated cases, both in primiparæ and multiparæ.

The birth-weight of the baby is also increased amongst the treated cases.

The committee did not find any evidence that there was any appreciable effect on puerperal sepsis, nor any influence on the character and duration of labour. Futher investigations were to be carried out to see the effects on the teeth of the mother and baby, but these were stopped by the war.

A similar series of cases, this time in the depressed areas, was investigated by Margaret Balfour, the experiment being organised and carried out by the National Birthday Trust Fund. Again the investigation was carried out immediately pre-war (from 1937 to 1939), and was stopped by the war. Again the women were divided into two groups, " fed " and " non-fed " cases, the majority in the " fed " class being poor women, while those in the " non-fed " had in the main a better economic status. Each woman on the Birthday Trust Fund received 1 lb. of Ostermilk and $\frac{1}{2}$ lb. of Ovaltine, plus either 4 oz. marmite or 8 oz. Minadex fortnightly. Minadex contains vitamins A and D, calcium, phosphorus and iron. The results were measured by the effect on (1) still-birth and neo-natal deaths ; (2) maternal mortality rate ; and (3) toxæmia rates. They show a marked diminution of the still-birth and neo-natal death rate in the Marmite-yeast cases, particularly in the areas such as the South Wales areas where the rate amongst the control cases is high. The evidence is in favour of the Marmite-yeast group being more effective than Minadex. The beneficial effect on the maternal mortality rate is not so obvious, although present, as there was not a sufficiency of cases from which to judge. The incidence of toxæmia is also less in the " fed " than the " unfed " cases.

Ebbs, Tindall and Scott have also shown in America that women on good diets or receiving supplementary foods had fewer complications during pregnancy and labour than women on a poor diet, and that in them the incidence of miscarriages, still-births and premature births was less. It is only fair to say that this work has not been confirmed by all American workers.

At the present moment, a committee has been set up by the Royal College of Obstetricians and Gynæcologists with Sir Joseph Barcroft as its chairman, to study this subject further.

In conclusion, one can only say that the balance of opinion at the moment is in favour of the beneficial effects of an adequate diet on the health of the mother and of the child.

TUBERCULOSIS IN CHILDHOOD.

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AS the title of this address now stands, it would seem to embrace the conception of T.B. infection or invasion of the body, as well as the actual disease that may follow such invasion in humans between the ages of nought to fifteen years. Later it will be seen that infection is a common occurrence in childhood, disease relatively rare.

There are only two principal sources of infection: (1) Sputum of phthisical persons; (2) Milk of tuberculous cows; and if they could be eliminated T.B. disease in man would disappear.

Bovine infection causes ten per cent of all T.B. disease in humans, but in children is commoner than in adults. Approximately fifty per cent of child cases of abdominal T.B., cervical adenitis, lupus, osseous disease, are caused by bovine infection; twenty-five per cent of deaths from T.B. meningitis are attributable to the same source, and in certain rural areas about five per cent of lung tuberculosis is due to bovine infection.

In all, bovine tubercle is responsible for twenty-five per cent of deaths from tuberculosis in childhood, the remainder being due to human infection, so that, obviously, the latter is the greater problem annd kills three times as many children, twenty times as many of all ages as the former.

The proportion of bovine to human types of infection varies from State to State and from place to place within each country. Wherever a rigorous policy of milk pasteurisation is effectively carried out, disease resulting from bovine infection has ceased to be more than a minor problem. The recent embargo on the consumption of British milk by U.S.A. troops is a reflection on the purity standard of our milk supply, but was a wise and necessary measure since thirty per cent of our dairy cows are tuberculous, and six to eight per cent of milk coming into our towns is contaminated with living tubercle. In London, where ninety-five per cent of milk is heat-treated, bovine tubercle is responsible for a negligible mobidity and mortality among children. More than one thousand child deaths and much more crippling and ill-health can be laid annually at the door of all who resist a national plan for milk pasteurisation.

Infection may enter the child's body via the respiratory or alimentary tracts. The latter is the natural portal of entry for milk-borne infection, but in the very young is probably the common route for infection by human bacilli as well.

The tuberculous process was traced in the human infant and in the guinea pig from the time of "invasion" up to the stage of "primary infection," which in the vast majority of children became the site of arrested disease. The danger, in the very young, of a "post primary" spread of disease was emphasised, when fatal miliary or meningeal disease might follow within a few weeks or months.

In the course of "primary infection," which became latent or healed, the child might exhibit few or no symptoms of ill-health.

Two results ensued from "primary infection" should the child survive, as it usually did, unless in the dangerous months of infancy: (1) Some immunity was acquired against later re-infections; (2) Hypersensitivity (allergy) of the tissues developed.

The first was beneficial; allergy was mainly harmful but ensured that later re-infection caused an ulcerative localised lesion, instead of the spreading lympho-haematogenous type of disease seen in the infant or guinea pig. Phthisis ("consumption" of the lungs) was never seen in infants, rarely in childhood, but was the typical adult type of lung disease and was the result of re-infection in a person who, years previously, had been "primarily infected" and had, in consequence, developed allergy.

It was within the knowledge of all who worked among children that T.B. disease was comparatively rare. Infection was, however, common, as had been demonstrated wherever surveys had been done in child populations by means of the intra-dermal tuberculin or Mantoux test. An average survey among children would show that less than ten per cent of infants under one year were infected. As the T.B. bacillus was ubiquitous, the child sooner or later came into contact with it, so that the proportion of Mantoux reactors rose until, at the end of childhood, fifty to seventy per cent of children had become infected and gave positive Mantoux reactions.

This conclusively proves that T.B. infection is not always followed by disease, since, at fifteen years, fifty to seventy per cent of children are thus known to have been infected and nowhere during childhood do the morbidity or mortality rates reach anywhere near this figure. The inference is that T.B. infection is not necessarily followed by disease.

The types of disease in infants, pre-school, and older children were then described briefly, and while none was restricted to any particular age group, the miliary and meningeal lesions were commoner in the pre-school child and infant, whereas osseous and joint disease, thoracic and abdominal disease, were more typical in older children. Two conditions, sometimes not associated in the mind with childhood tuberculosis (as they should far more frequently be), namely, erythema nodosum and phlyctenular conjunctivitis, were emphasised as indications of tuberculous allergy. They should promptly invite full investigation, and a search in the home or school environment of the child concerned for a potential source of infection. These children are (until proved otherwise) in recent and continuing contact with a case of human tuberculous disease, in the vast majority they are themselves likely the subjects of primary intra-thoracic disease; nearly all are positive Mantoux reactors.

T.B. disease causes no neo-natal mortality. There is a high case mortality in first two years of life. Thereafter, until fifteen years, the numbers who succumb are very small, and if infection is to take place, it is best that it should do so between the third and fifteenth years.

From 1911—1939 mortality in children decreased steadily, particularly in infants and in non-pulmonary types of disease. Inevitably during the war years there was a rise in the incidence and deaths from T.B. at all ages. In Hull, the position in regard to children became restored in 1943, but in the four-year period 1940—1943, twenty-five per cent more children

died in Hull from T.B. meningitis than in the preceding four years. This figure conceals a greater increase which may well have amounted to one hundred per cent compared with peace-time figures, since during the period under review the child population at risk was much diminished by evacuation, the exact amount of which could not be assessed and continually fluctuated. This fatal type of tuberculosis could, in most cases, be traced to a familial source of infection, and its morbidity fell especially on the pre-school child.

In spite of the temporary setback due to war, tubercular cripples, the scars of scrofula, and the gross disfigurement caused by facial lupus, are much less in evidence than they were twenty-five to thirty years ago in our big cities.

Eradication of childhood disease would result from protection of the child against infection coming from whatever sourse, bovine or human. The former could be eliminated in one generation, granted sufficiently heroic administrative and legislative measures.

Human infection is much less easily eliminated. Isolation of all "open" tuberculosis would be impracticable and would not be tolerated in this country. There are 70,000 infectious "sputum positive" cases and only 20,000 hospital and sanatorium beds. It is suggested that removal of those children exposed to risk in family nests of infection, temporarily to children's homes or preventoria until the dangerous early years are over, might be the better solution. Artificial immunisation of these children had been done in certain Continental countries during the past twenty years and the reports of its success had been encouraging, although it had not gained much favour in this country up to the present. It adds a temporary "artificially acquired" immunity to the "natural" immunity that we all possess in greater or lesser degree, but immunity was not absolute and both types could be overcome by massive or repeated doses of injection and by adverse bodily and environmental conditions.

Children who were ill required treatment in a good open-air environment but not necessarily in sanatoria and certainly not among adult sufferers there. Where home conditions were reasonably good, children should, if possible, be retained there, as that was their natural milieu.

Finally, it was re-emphasised that we should, by all the means at our command, try to protect the very young, in whom T.B. was a lethal disease; later in childhood it was much more benign as to its outcome, and ninety per cent of children infected with tuberculosis passed through life without detriment to health either in childhood or later in life. As well as infection, what determines the onset of disease in an individual lies in the "constitutional" factor (that native power that we all have to resist disease) and it is important never to forget that that factor may be profoundly influenced and undermined by poverty, bad housing, insufficient food, etc. This is particularly true in the prevention of tuberculous disease.

INDUSTRIAL MEDICINE: A WAR-TIME REVIEW

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War and Social Changes.

It is a remarkable thing that it takes wars to shake the public conscience and bring about reforms—often long overdue.

After the Napoleonic Wars came the abolition of slavery in the British Empire, the beginnings of elementary education, and the first Factory Acts.

The efforts of Florence Nightingale during the Crimean War introduced reforms of Army hygiene and nursing.

The physical unfitness of many Army recruits during the South African War was exposed, and partly because of the excessive mortality from disease in the field various social changes were brought about by the Parliament of 1906, such as workmen's compensation for accidents, the feeding and medical inspection of school children, the campaign for the prevention of infant mortality, and eventually National Health Insurance.

The Great War, 1914-18, was responsible for many changes, and industrial medicine, as we now know it, received its first recognition. In 1915 a committee was set up under the chairmanship of Sir George Newman " to consider and advise on the questions of industrial fatigue, hours of labour and other matters affecting the health and physical efficiency of workers in munition factories and workshops." Extensions to already existing schemes were introduced, such as the care of mothers and infants, medical treatment of school children and welfare work in industry was established. After the armistice, the Ministry of Health came into being.

From 1919 to 1939, industrial medicine in this country lapsed—it was the " baby branch " of medicine—neglected even by our schools and teaching hospitals ; it appeared to be " unwanted " by all, except the large combines and a few large progressive companies who realised its value. In 1930 there were less than 50 Industrial Medical Officers (whole time and part time) in this country.

The war of 1939 to 1945 was responsible for many changes introduced to safeguard the health of workers in industry. It was rightly stressed that the Home Front was equally as important as the other forces ranged and equipped for carrying the conflict to a successful termination. In 1940 the Factories (Medical and Welfare Services) Order empowered the Chief Inspector of Factories to require the occupiers of factories engaged on munition work to appoint whole-time or part-time medical practitioners, nurses or welfare officers where he considered them necessary.

By 1942 the number of doctors in industry had risen to 700, and in 1945 there were over 1000 Industrial Medical Officers and 4000 nurses engaged in industry—a truly remarkable achievement. Much progress

has been made in other directions. We now have the "British Journal of Industrial Medicine," the Association of Industrial Medical Officers, Post-Graduate Courses for doctors engaged in industry, and the excellent publications of research work carried out by the Industrial Health Research Board. The Royal College of Nursing instituted a course of training for State registered nurses engaged in or contemplating entering industry and granted by examination a certificate in industrial nursing. Many teaching hospitals ran week-end courses for nurses in industry.

The Industrial Medical Officer.

In my opinion, this is not work suitable for the newly qualified or the man straight from hospital. A year or two spent in an industrial practice is a good training-ground, so as to enable him to get a correct background of the worker, i.e., his home conditions and the use of leisure. A factory M.O. must not be a glorified casualty surgeon. He must be interested in preventive medicine, a student of sociology and be able to fit into an industrial organisation working in co-operation with other departments, technicians, etc. He must have a working knowledge of the Factories Act, Workman's Compensation and Trade Union organisations. He should make and maintain contact with the heads of various departments in the factory, e.g., staff, works, labour, welfare and canteen, the foremen of the various shops, the shop stewards and the works councillors. He should also be in touch with outside organisations, e.g., the local Public Health Department, hospitals, clinics, general practitioners, convalescent aid societies, etc. Before taking up duties in his own department he should do a complete tour of the factory, noting the various processes in operation, industrial hazards, safety devices in use, and heating, lighting and ventilation, all three of which have an important bearing on the health of the workers. If he spends most of his time in his own department, he is failing in his duty—a good deal of his time should be spent in the factory if he is going to warrant his title of Industrial Medical Officer, because his work is partly curative, but mainly preventive. I dislike most intensely the term "First Aid Department or Ambulance Room"—it savours too much of splints, triangular bandages and elementary treatment: it is wrong, psychologically. The duties of the industrial medical officer include:—

(1) **Examination of Prospective Employees,** the objects of which are: (a) To ensure that employment is not offered to persons whose physical defects might endanger themselves or others; (b) To ensure that persons engaged for employment are assigned to work best suited to their physical and mental conditions in so far as may be practicable; and (c) To enable minor physical defects to be detected at a stage when remedial treatment is more easily effected.

I would like to stress that the number of total rejects is very small indeed.

(2) **Examination of Existing Employees**—(a) Those employed on dangerous processes ; (b) After absence (prolonged) due to illness or accident—here the M.O. can play a big part in rehabilitation ; and (c) Juveniles—these need constant supervision if their health is to be safeguarded.

Time spent with juveniles is time well spent, and industry at large will reap a great regard, not only by safeguarding their health, but by furthering their education and assisting to mould their characters. Lectures on health matters, hygiene, individual and collective, sex education, etc., all fall within the province of the medical and welfare departments.

(3) **Treatment of Injuries** occupy a good deal of the time of the medical and nursing staff. Workers should be encouraged to report for treatment, no matter how trivial the injury appears. Most of these injuries affect the hands and arms—vital parts of the body from the point of view of earning capacity. If neglected, or wrongly treated, these minor injuries often lead to major disasters through sepsis—which is the main cause of lost time from accidents,—interferes with production in industry, and cause disruption of the home-life owing to financial loss. Sepsis, therefore, must be prevented wherever possible and always reduced to the irreducible minimum. This is possible by early and efficient treatment, e.g., thorough cleansing of the wound, efficient strapping, splinting and bandaging, and redressings and the removal of first-aid boxes from within the factory.

(4) **Eye Injuries.**—The importance of these conditions cannot be over-stressed. Again, neglect or wrong treatment often lead to major disasters. Six thousand eye injuries per annum are compensatable in the United Kingdom.

(5) **Dermatological Courses.**—Dermatitis is the cause of much loss of time in industry, and much can and has been done to reduce its incidence by (a) careful selection of personnel, where there is a dermatitis hazard ; (b) the wearing of protective clothing and the correct application of the appropriate barrier cream ; (c) the frequent inspection of the workers and the early removal from the work of any person showing signs of dermatitis ; and (d) last but by no means least, cleanliness—the supply of adequate washing facilities and the education of the workers as to the necessity for cleanliness of the skin.

(6) **Toxic Hazards.**—Employees working on jobs with a toxic hazard require careful supervision. Dr. Ethel Browning has done magnificent work on the effect of radiations used in industry and the toxic effects in women exposed to industrial rubber solutions. Clinical examination of employees working on these processes is not sufficient to detect early changes—a full blood count being necessary at regular intervals if serious consequences are to be avoided. This examination, together with the necessary safe-working conditions, can only be brought about by the active co-operation between M.O.'s and technical experts.

(7) **Hygiene,** individual and collective. Ample opportunity presents itself for this subject to be dealt with by (a) voluntary consultations, (b) propaganda by lectures and posters, (c) by the close supervision of contacts with notifiable infectious diseases.

(8) **Industrial Fatigue and Boredom.**—One investigator has said that "fatigue has a larger share in the promotion or transmission of disease than any other casual condition you can name." Factors predisposing to fatigue are: (1) long hours of work, (2) hygiene, (3) heating and (4) lighting, (5) ventilation, (6) excessive noise, (7) monotony, and (8) worry. For a time, people can work excessive hours with a corresponding increase in output, but later output falls, absenteeism increases and the works accident rate rises—sure signs that the workers are becoming fatigued. The only remedies are to reduce the working hours and introduce rest pauses. The industrial rest breaks scheme proved extremely useful in many of these cases of industrial fatigue.

(9) **Committee Work.**—The M.O. should attend the meetings of the various committees, e.g., works council, safety, canteen, etc.

(10) **Record Keeping and Statistics.**—Record keeping is an irksome business to most people, but it is an essential part of one's duties. It is not only useful for statistical purposes, but is an index and the only true guide as to the work done in the medical department and of the value of the medical department to industry. A personal record should be kept of all employees and should be regarded as absolutely confidential. The treatment book should be kept by the sister-in-charge, and all treatment given in the department must be entered. Special statistics required by the management can easily be obtained from this book, e.g., injuries involving fingers and hand, eye injuries, burns, scalds, septic cases, etc., etc. These statistics when correlated with those obtained from the labour department (certificated absenteeism) are both interesting and of great value, both to the doctor and the industrialist. The total man hours lost due to injuries, septic cases and illness (under various headings, e.g., cardio-vascular, respiratory, alimentary, rheumatism, influenza, etc.), the accident rate and severity rate are all of inestimable value.

(11) **Teaching of First Aid.**—In addition to the set course of first aid as taught by the various organisations, the M.O. can concentrate later on the various types of accidents likely to arise within his own factory.

Women in Industry.

The war has dispelled the idea that women are unsuitable for industrial work. With certain exceptions, women can do almost any work, do the job extremely well and without injuring their health, providing they are given the right conditions. One writer has said: "If an environment is safe, it is equally safe for men and women, ... the susceptibility of women, if such does exist, should imply more extensive

medical and engineering control measures, not exclusion from the job." With that statement I entirely agree. When employing large numbers of women, particular attention should be paid to selection and training, safety measures and accident factors, and adequate welfare facilities should be provided. One should pay particular attention to the question of weight-lifting, to remember that women are said to be more susceptible to certain toxic substances than are men, and also to the risk of dermatitis. Women are said to be more susceptible to fatigue than men—but when assessing this, one must always remember the dual burden of many women in industry, i.e., the household duties with which they are confronted after a day's work in the factory. This extra burden plus all the other responsibilities, e.g., shopping difficulties and the worries of their menfolk being absent on service, account to a large extent for the increased absenteeism amongst women compared with male workers.

The health of pregnant women has to be adequately safeguarded by (a) early examination and reference to an ante-natal clinic ; (b) removing such women from toxic hazards, e.g., lead, benzol, T.N.T., etc.; (c) taking them off work which has a dermatitis hazard ; (d) avoiding heavy work ; and (e) forbidding light work after the four-and-a-half month.

The rest room should be under the supervision of the nurse, and she should bring to the notice of the M.O. any woman who has to rest for a prolonged time at each menstrual period.

Such cases are often pathological and warrant further investigation, either by the person's own doctor or a gynæcologist. During the menopause many women are more prone to neurosis, injury, anæmia, etc., and these conditions should be carefully noted.

Resettlement and Rehabilitation.

Rehabilitation is much before the public eye at present. It is no new subject and has been tackled by many firms and combines for many years. It is now, fortunately, being handled on a national basis by various ministries, and soon all firms will be called upon to play their part. The M.O. and the technicians will have absorbing problems to face and solve in this important sphere. Resettlement of those returning from the Forces is occupying the attention of the medical, labour and welfare departments, and calls for the closest co-operation in order to help to readjust these people who for so long have been leading a totally different kind of existence. Patience, understanding and tolerance will be vitally necessary.

The Future.

Is industrial medicine going to lapse in this country as it did after the Great War? This is an absorbing question. With the large firms and combines, I unhesitatingly say "No!" It is the small firms that I am concerned about. We must remember that 75 per cent. of employees are working in firms employing less than 500 people. Will

competition in trade be such that employers will have to reduce their overhead charges? If so, the economy will have to fall on the non-producers, amongst whom are medical officers, nurses and welfare officers. If this does happen, I feel quite justified in saying that it will be false economy. How, then, can this problem be overcome?

(a) By a group of small factories in a district employing a medical officer, nurse and welfare officer and pooling the expense incurred? (b) A number of small factories doing similar work grouping together and running a scheme as aforesaid? (c) Is the alternative a State subsidy to industry? Or (d) will industrial medicine be an integral part of the forthcoming National Health Service?

Whatever happens, the industrial medical officer is employed to give a professional opinion, and must be the servant of industry. By his efforts he can assist production, reduce the incidence of sickness and accidents and lost time, and so help in preventing the disruption of the home-life of the workers. Our work is of national importance and I hope we have made ourselves indispensable in the industrial world.

THE CARE OF PREMATURE INFANTS FROM THE HEALTH VISITOR'S POINT OF VIEW

By Miss G. L. Reed,

Matron, St. Mary's Hospital for Women and Children, Manchester.

IT would be quite possible in planning this lecture to have given you a day-to-day survey of the care of the premature baby, commencing with the preparations surrounding its birth. Instead, I should prefer to treat the subject more broadly from a national rather than a nursing point of view, as it is the privilege of Health Visitors to have a great influence on public opinion, and the premature infant is a social problem. The type of care given to premature babies is a yardstick by which to measure the standard of civilisation. In many primitive tribes, weakly infants are cast out either from lack of a sense of responsibility or from suspicious fear.

To-day's Problem.

The care for the premature baby looms largely in our thoughts to-day for two reasons:

(a) The prematurity is probably the greatest single cause of neo-natal death. This was borne out by the report on infant mortality in Scotland.

(b) The birthrate is such a source of concern, including as it does the question of national survival, that this large death-rate of potentially healthy citizens cannot be allowed to continue.

General Consideration of the Problem.

The subject can be considered in three main divisions:

(1) The causes of premature births and the possible treatment to avoid birth before the pregnancy has gone to term.

(2) The provision to be made for premature infants, reflecting as it does the social conscience regarding prematurity.

(3) The type of after-care provided when the infant has reached what would have been full-term and normal weight.

(1) The Causes of Prematurity.

These are probably, in order of importance:

(a) The toxæmias of pregnancy.

(b) Chronic nephritis.

(c) Ante-partum hæmorrhage.

(d) Multiple births, the constitutional illness of a mother and malnutrition also account for quite a proportion of under-sized and delicate babies.

In dealing with any cases of prematurity, it is neccessary to know the *cause,* as this will have a marked effect on the *type* of premature baby. There is, to my mind, quite an amount of confused thinking when prematurity is associated always with the actual weight of the baby. It would be far more logical to judge the results of the care of premature babies from two other factors, e.g., (1) the *cause* of the premature birth, and (2) the *actual weeks* of prematurity.

These two factors will have a far greater influence on the survival of the baby than its actual weight.

It is my view that all statistics should be grouped according to the *cause* of prematurity in relation to the weight as actual vitality of babies varies so greatly.

Toxæmias.—The infants are definitely, in most cases, toxic to some degree, lack vitality and are more inclined to become œdematous due to disorganisation of tissue metabolism.

Chronic nephritic babies lack vigour, are inclined to œdema, and are remarkably anæmic and frail. *The infant produced by ante-partum hæmorrhage,* apart from definite asphyxia of birth, is usually quite without any inherent vigour. The healthiest type of premature baby is one of twins, who are not usually more than eight weeks premature at the most.

It is as well at this stage to run over the

Signs and Symptoms of Prematurity.

(1) Small infant—under $5\frac{1}{2}$ lbs.—lacking in sub-cutæneous fat, wrinkled skin.

(2) Length under nineteen inches.

(3) Head larger in proportion to body than full-term child.

(4) Lango (hair) on temples and sides of face—markedly spread over infant's skin.

(5) Finger nails, fine and do not reach to end of fingers.
(6) Wailing, high-pitched cry, fretful in tone.
(7) Feeble at sucking, often quite unable to take feeds because the sucking and swallowing reflex is either very weak or absent altogether.
(8) Liable to rapid changes of colour.

(2) Provisions to be Made for Premature Babies.

(a) CARE AT TIME OF BIRTH.

It is one of my prejudices that premature labours should take place in maternity hospitals. If the ultimate aim is to preserve the life of *every premature baby,* it is necessary to provide all possible apparatus for each individual delivery. Whether it is required or not will not be known until the infant is born.

On admission of the mother, the cause of the premature labour should be ascertained and preparation made for the baby. The fœtus-in-utero is dependent for the maintenance of life on a supply of oxygen from the mother. It has been proved in practical use, that when fœtal distress exists during labour, the oxygen content of the fœtal blood can be raised by giving the mother inhalations of oxygen; this increases the oxygen content of the mother's blood and brings more oxygen to the placental circulation, which, in turn, raises the oxygen content of the fœtal red blood cells. It is difficult to give this treatment in district homes, but were it more widely employed, I am sure the infants would be born in a stronger condition.

Quite apart from the management of labour and the provision of oxygen, it is necessary to have ready a warm cot, a room with clean air, controlled humidity, respiratory stimulants, and an adequate nursing staff. A premature baby should never be left unattended after birth.

(b) PROBLEMS OF THE FEEBLE INFANT.

(1) *Respiratory stimulation.*—The nervous mechanism which is responsible for the birth of a baby is generally recognised to be brought about during the progress of the second stage by interlocking natural factors, i.e., when a normal full-term infant's head is passing moulded and compressed through the birth canal, the strength of the second-stage uterine contractions are inhibiting the circulation on the placental site, which, in turn, has during the whole of labour been lessening in circumference. The natural sequence of events is that the placental circulation is less active and the gaseous interchanges are lessened, resulting in a rise in the carbon-dioxide condition of the fœtal blood. This acts as a respiratory stimulant, and as the infant's head is born, coming into contact with air, the Medulla Oblongata has reached the maximum of stimulation, and respiration takes place due to the slowly built-up reserves of carbon-dioxide. This mechanism is lessened in effect in premature births as the second stage is so very much shorter, the fœtal head smaller—consequently the respiratory stimulation is weaker, quite apart from the other factors.

(2) *Respiratory effort.*—The lungs, ribs and associated muscles of respiration are all small and not capable of the vigorous activity of the larger baby, resulting in marked chest breathing and shallow respirations.

(3) *Hæmorrhagic complications.*—The rapid moulding of the small head as it passes through the pelvis, together with the rather rapid expulsion that comes with premature births, results in a greater incident of intra-cranial injury. For this reason, it is usual nowadays to give the mother a supply of vitamin K preparation, which will increase the pro-thrombin activity of her blood and lessen the possibility of tissue hæmorrhages. The dosage is often kept up after the birth of the baby.

(4) *Metabolism and digestion.*—In the development of the normal fœtus-in-utero, the gain of weight as the weeks go by remains at the steady one of approximately one pound per month. During the last four weeks, however, the infant puts on weight at double this rate and this means in effect the building up not only of increased muscle tissue but the widespread increase of fat and connective tissue. This tissue reserve of energy foods is used by the infant immediately after birth, to tide the period between birth, the termination of the placental food supply and the establishment of digestion in the infant's own alimentary tract. Just as a starving man metabolises food reserves in his tissues and loses weight, so the after-birth loss that accompanies the establishment of digestion is due to the metabolism of energy reserves in the tissues, carefully placed there before birth. By this careful arrangement, the body heat of the infant is maintained, energy is produced and tissue metabolism established without requiring that the infant should immediately digest and absorb food which would of itself require a great deal of body energy.

It is quite obvious, therefore, that the premature baby is physically penalised by the accident of leaving the uterus too soon and lacks a great deal in that it is born before it has acquired this additional weight.

(3) After Care.

Once born successfully and having taken breath, the care of the premature baby becomes a matter of watching for two possible dangers:

(1) The breakdown of respiratory effort and diffusion of gases, with consequent lack of excretion of carbon-dioxide and of oxygen intake.

(2) The breakdown of tissue metabolism, that is, absorption of food-stuffs, and the deposit in the tissues of the necessary food elements to maintain growth and body heat.

In practice, this means watching for cynosis, as a quite healthy premature baby, which often survives, may in the early days have repeated attacks of cynosis due to lack of stability in the respiratory reflex. Secondly, œdema may be quite widespread, indicating a lack of balance in the tissue changes.

Nursing Care of the Baby.

This can be summed up briefly as follows:

(1) *Maintenance of warmth,* i.e., a settled cot temperature, usually averaging 90° F., and a settled room temperature usually about 70°—75° F.

(2) *The provision of increased humidity in the air.*—Usually to 65%.

(3) *Feeding to allow adequate absorption and body metabolism.*—(Quite often premature babies are dosed with Oestrin and Thyroid extract.)

(4) *The mother's part.*—This can be summed up briefly:

(a) Her interest must be aroused.

(b) Her full co-operation is necessary and treatment to stimulate breast-milk supply.

(c) Instruct her in the detailed care of the infant and interest her in the sense of achievement in rearing a difficult child.

General Care.

In brief, the general care of premature babies is that from

2—3 lbs. the weight gain is slow, due to the fact that the physical resources of the infant are weak and frail and the full establishment of body growth, such as indicated by a gain in weight, may take quite a time.

3—4 lbs. the weight gain in more rapid, there is more movement, crying and bodily activity.

4 lbs.—A vigorous baby with body metabolism intake and output can be educated at this stage to feed from a larger and larger teat and be prepared for feeding at the breast.

4—5 lbs.—A healthy premature baby can be allowed in a normal atmosphere plus a little increased humidity and educated to feed at the breast; clothing and mollycoddling reduced.

If a premature baby is fully breast fed and gaining weight, it should at 5½lbs. be given fresh air and gradually a quite normal routine, taking into account the provision of a little warmth. It is a matter of great concern to me that so many premature babies are not breast fed due to lack of provision for home help for mothers who may have other children, lack of hospital beds where feeding can be supervised and established, and lack of the personnel deeply interested in meeting the necessity for natural feeding.

If a baby is breast fed it is not necessary to regard a premature baby as something particularly feeble and frail for the whole first twelve months of its existence. The balance of treatment should be the provision of every facility at birth to maintain body heat, to provide oxygen therapy for the full expansion of the lungs, careful watching of the infant to deal with possible cynosis—thus giving the infant an adequate start. Once life is established, careful feeding and preparation of the baby and the mother for breast feeding should be finally the aim.

The full establishment of breast feeding at whatever cost of time on the part of trained personnel is an utter necessity.

Premature babies, if they are to avoid respiratory diseases in the first year of life, must be breast fed to obtain the antibodies passed over through the breast milk from the mother's blood. To rear an infant without these natural safeguards is to rear a possibly feeble infant.

Far too much attention is directed on mollycoddling feeble babies, without close attention to the full expansion of the tiny lungs to their

ultimate capacity. Often, too little care is taken to establish the mother's milk supply and the feeding of the infant naturally. It should be possible at three months after the expected date of birth has passed for the premature infant, while being a little smaller, *if breast fed,* to be as active and as normally healthy as any other little baby twelve weeks after birth, with the one exception that it has been on the earth a few weeks longer.

THE PRODUCTION OF IMMUNITY

By Mrs. Clara Stewart, M.B., B.S.,
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ORGANISMS and their products introduced into the body stimulate the formation of antibodies; each germ has its own antibody. Any substance which stimulates the production of an antibody is called an antigen. When the body receives small amounts of antigen at intervals it can make a better response to infection, and when the cells of the body have once learnt to produce a particular antibody they readily produce more. This is the case in diphtheria immunisation, where the immunity which was produced has disappeared or diminished is restored by a quite small refresher dose.

The body has natural defences against infection: the unbroken skin and mucous membranes, tears, sweat, acidity of gastric juice; diet, especially the presence of sufficient vitamin A, also helps. The ability to withstand infection is also affected by the health generally at the time and by the virulence of the invading germs.

Immunity may be acquired actively or passively.

Active.

(1) By an attack of a particular disease, after which there is a varying amount of immunity for a differing length of time.
(2) Through repeated exposure to small doses of an infection. Children in urban schools give a higher rate of Schick negative reactions than do children in rural schools.
(3) By the introduction of small doses of a particular antigen into the body as in diphtheria immunisation.

Active immunity is used prophylactically, it is slower to become effective but it lasts longer.

Passive immunity may be gained through:

(1) Inheritance. In general, babies under six months are immune, diphtheria is rare under one year.
(2) Breast feeding. Colostrum is very rich in antibodies.
(3) By the injecting of serum, obtained usually from the horse, which has been actively immunised against the particular infection, as in diphtheria and tetanus.

Passive immunity is quickly effected, but its duration is short-lived.

Vaccines are a mixture of living or dead organisms. Toxins are produced in the growing of bacteria and are peculiar to their own germ.

Toxoids are toxins which have been treated and rendered less harmful, e.g., toxoid of diphtheria has been treated with formalin. Serum is obtained from the blood of animals or humans infected with the particular microbe or injected with its toxin, and it contains the specific antibody. There are various tests for the presence of antibodies in the blood. Schick for diphtheria, Widal for typhoid, Wassermann for syphilis.

Immunisation against Diphtheria.

Antigens used: F.T., A.P.T., T.A.F.

Methods, interval, etc.

Authorities give 85 to 95 c/o as conversion rate from a positive to negative Schick test.

Duration of immunity varies; tendency to sluggish response with time, and a refresher dose after two years gives good results. In Leeds a further refresher dose after another two years is not recommended unless a Schick test shows a positive reaction.

Incidence of diphtheria in immunised children in two towns in 1944, with about 75% of child population immunised, was 1 to 5—6, but the death rate of cases occurring was only 1 to 15 in our town, and in the other only two deaths have occurred from diphtheria in immunised children during the last ten years.

The production of immunity actively, passively or both, has been extensively used during the war with remarkable results in typhoid, tetanus, and in certain areas cholera, plague, typhus and yellow fever.

Much research is being done on other infectious diseases, e.g., measles (serum from convalescent patient has been used occasionally), whooping cough, common colds and influenza, but at present results are uncertain.

INFECTIONS OF THE EARS, NOSE AND THROAT

By E. M. Dearn, Esq., M.B., C.H.B., D.L.O., R.C.P.S.,

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THE ear is a very important part in the human anatomy. It is frequently involved by infections and very often has pain referred to it from infections in close proximity.

Children who are teething often have pain referred to the ears, and may be seen to shake their heads or pluck at one or both ears. This may result in the pinna being scratched and some infection from baby's dirty finger nails causes an impetiginous sore to develop with inflamed pre, infra, or post-auricular glands, and these may quickly go on to abscess formation. Pain can also be referred to the ear from a decayed tooth, mumps or sore throat. A scratch made in the meatus may first of all cause a furuncle to develop, a very painful condition which may close the meatus. It may, likewise, cause adenitis and abscess formation, a condition which can also arise from a septic head due to lice and nits. Serous discharge may spread on the face causing impetigo. Sulphonamide ointment is successful in treating this, while calamine lotion will be found soothing to the pinna.

Swelling of the post-auricular gland area with or without abscess formation may be confused with the swelling of mastoiditis. In the case of children, the swelling in mastoiditis is usually higher up and may be above the ear in the zygomatic region as well as behind the ear—the ear being pushed downwards and outwards. The glandular swellings are situated usually below the middle of the mastoid process. Mumps is not always bi-lateral, and when one side is affected only, the swelling may cause fears of mastoiditis.

During the past few years acute otitis media and mastoiditis, on many occasions, have not behaved according to the text-books. We have had some very potent streptococcal infections frequently hæmolytic in type. These have invaded the middle ear and mastoid cells simultaneously in many patients, so that advanced mastoiditis has occurred within twenty-four to forty-eight hours of the onset, with the drum not perforated. The child has had a temperature of 100° upwards with mastoid tenderness, in some cases only slight. Paracentesis of the drum was performed in some cases in an endeavour to save the more extensive operation, but profuse pulsating pus through the drum for a day or two subsequent to the paracentesis is enough to indicate mastoidectomy even when the temperature has settled.

Here I must give a warning about the use of sulphonamides. Infection in the middle ear can be checked and cured by these drugs, but once the infection has spread to the mastoid process, the germs may be killed but the necrosis goes on, resulting in extensive mastoid involvement with abscess formation. Sulphonamide can mask the infection so that in spite of gross disease in the bone there is no mastoid tenderness, but the patient's life is in danger by infection through the meninges. In some cases the ear may not suppurate, but there may be a catarrhal infection of the middle ear causing blocking of the Eustachian tube. The use of sulphonamide may cause scar tissue to develop with the consequent complete fixing of the osicles and permanent deafness. I favour the use of sulphonamides in ear complications after mastoid operations, but not prior to seeing the patient. Those who do not respond to sulphonamide may respond to penicillin. Any child with earache should be referred at once for medical attention; it is important that early treatment should be secured. The idea that as long as an ear is discharging the condition is satisfactory is completely untrue.

Several children in hospital with diarrhœa and vomiting have developed acute otitis media as the result of, most probably, vomited matter entering the Eustachian tubes, which in young children are almost horizontal, thus making it easy for matter to enter. Earache may also be caused by foreign bodies, e.g., beads, pieces of rubber, small buttons, peas or beans.

NOSE.—Children sometimes exhibit a soreness of the skin round the nose. It may be a dermatitis or show scab-like impetigo. The condition may be due to a cold, acute or chronic sinus infection, and if chiefly round one nostril it may be due to discharge from the nares as the result of nasal diphtheria or a foreign body or sinusitis on one side. Nasal diphtheria is difficult to eradicate. Negative swabs may be found in hospital, but it becomes positive soon after returning home, and so back to hospital again.

The child may be in hospital for several months before it is clear of infection and all the time looks quite healthy.

Foreign bodies are found in children's noses quite regularly, and range from press-studs, beads, peas, primary teeth to tram tickets. A man of seventy-five years was found to have a rhinolith whose nucleus was a primary tooth, pushed up his nose when a lad.

Sinusitis is much commoner in children than is generally realized, and many children with chronic coughs or bronchitis are found to have an autrum infection—single or bilateral—which may quickly respond to a few lavages.

I am sure large numbers of children, especially from poor homes, are not taught the proper use of a handkerchief, probably from economic reasons to some extent, as well as inadequate teaching. Many adults sniff instead of blowing their noses.

Occasionally one meets a child with acute pansinusitis requiring exploration of the frontal sinuses as well as the autruma—quite a serious condition and one which could easily set up meningitis in forty-eight hours if not attended to.

When children fall and hit their noses, it is possible to fracture a cartilage, a hæmatoma may develop and go on to abscess formation which requires incision and drainage.

Children susceptible to colds may need their adenoids removing if mouth breathing is present. Ethmoidal polypi are found even in young children and have to be dealt with in order to restore the nasal airway. "Summer colds" may be the first indication that a child is allergic and is exhibiting mild hay fever symptoms, which become definite hay fever in a year or two's time. Tests may be carried out to discover allergic substances.

THROAT.—Apart from the ordinary follicular type of tonsillitis, which is fairly common, we have had a good many cases of severe streptococcal infections of the throat with generalised redness, high temperature, swollen glands and the child very ill. It is possible that the war-time diet, poor summer, and war strain has had an effect on the resistance of children and adults to the infections, which appear to have been more severe than in pre-war days. Complications such as retropharyngeal abscess or quinsy may occur. I am sure more children have quinsies than is generally realised. In cases where the tonsils repeatedly cause trouble, they are best removed, usually after five years of age. Where their removal is urgently necessary tonsillectomy can be done as early as two and a half to three years. Enlarged tonsils, the lower edge of which rest on the upper edge of the epiglottis, can cause a cough due neither to the chest nor nose.

Diphtheria is having much propaganda devoted to its elimination. Those who remember the severe type of diphtheria in Hull in 1931—1932, when children were dying within one to three days of the onset of the symptoms, will heartily support the idea of immunisation.

Vincent's infection of the pharynx and gums has been very common during the war. It is due to Vincent's Bacillus or spirochete. Resistance

may have been lowered by diet deficiences, but it has been spread frequently by inadequate washing of cups, glasses, etc., at canteens, cafés, due to shortage of staff. The condition responds to intramuscular injections of N.A.B. The throat may be painted with Mandle's paint with five per cent liquor arsenicalis. Penicillin mouthwashes and injections may now be used.

PENICILLIN

By Miss Bessie Dodd, M.B., Ch.B., D.P.H., D.R.C.O.G.,
Resident Medical Officer, Hull Municipal Maternity Home.

PENICILLIN has been in the limelight in press and medical journals during the last few years, and it has been much used in general hospitals.

Its discovery was partly accident. In 1928 Professor Alexander Fleming (Professor of Bacteriology, London University), found a staphylococci culture contaminated by mould, and that where the mould was the staphylococcal colonies had disappeared.

Sir W. Langton Brown remarks, "The discovery of penicillin by Professor Fleming illustrates Pasteur's dictum that *chance enters only the mind that is prepared.* Many bacteriologists," he goes on, "must have observed their culture plates contaminated by moulds, but only Fleming saw the significance of the observation. In fact, as far back as 1877 Pasteur himself *had* noticed that if a flask of broth containing the anthrax bacillus was contaminated by common air bacteria, the growth of the anthrax bacillus was stopped, i.e., the common air bacteria—or possibly the moulds present in the air—had destroyed the anthrax bacillus. This was the first observation that one organism may produce a substance which is capable of stopping the growth of another organism. And this substance is called an *anti-biotic.*" (Penicillin does this and is an anti-biotic.) Pasteur, of course, did not realise the significance of the presence of this anti-biotic substance. This is not surprising since bacteriology was then in its infancy.

One of the first jobs that penicillin—derived from this blue-green mould—did was to obtain a pure culture of influenza virus. This filter-passing virus is extremely difficult to culture, but penicillin destroyed all other bacteria, and so a pure influenza virus was obtained.

Penicillin was found to be a very unstable substance. It was easily destroyed by heats, acids or where traces of chemicals were present, and in 1928 it was decided that it had no practical value.

In 1938, Professor Flocey (Professor of Pathology, Oxford University) took up the investigation of penicillin, and in 1940 a stable product was produced. It had to be manufactured in a sterile atmosphere, the water was removed and the drug put up in powder form, either in tablets or ampoules. The action of the drug was tried out on mice. They were given large doses of staphylococci and streptococci, and then penicillin was injected. The mice survived. These results were published in 1941. Six cases of human staphylococcal septicæmia were treated with the drug and good results were obtained. In 1941 air-raid and battle casualties were on a large scale, and it was essential to have large-scale production of penicillin.

The United States were asked to do this, and early in 1944 penicillin was obtained in pure form. It is put up both here and in America in Oxford Units of 8,500 per tablet—a standard product.

Once a substance is obtained in a pure form, chemists get to work to analyse it to find out the exact chemical formula, to enable them to produce the substance in the laboratory instead of the laborious method of growing it in moulds. This synthesis, as it is called, has not yet been achieved.

Penicillin has the great advantage that, though it is an antiseptic, it does not harm or destroy body tissue. Such substances are termed chemetherapeutic agents, other examples being quinine arsenic and the sulphonimides. Penicillin also acts on the staphylococcus which the sulphonimides do not. One of its enemies is the bacillus Coli, which resists penicillin and kills its action by producing penicillinase. Other penicillin *resistant* germs are the tubercle bacillus, the typhoid-dysentery group (but *large* doses may be partially sensitive), streptococcus fæcalis, viruses probably, whooping cough bacillus and cholera bacillus. It has no toxic effect, but occasionally skin rashes have been produced by its use. The presence of pus, serum or dead tissue does not stop its action. It acts in great dilution—one to fifty million pure or one to one million impure. Stronger solutions may be less effective.

Penicillin Sensitive.

1. Staphylococcus aureus.
2. Streptococcus pyogenes.
3. Pneumococcus.
4. Meningococcus
5. Gonococcus.
6. Syphilis.
7. Gas gangrene.
8. Tetanus.
9. Anthrax.
10. Actinocycosis.
11. Vincents' angina.
12. Diphtheria bacillus.
13. Streptococcus viridans.

ADMINISTRATION AND DOSAGE.

To give in liquid form, the tablet is usually dissolved in normal saline. Intravenous injection, given slowly over several days (disadvantage—venous thrombosis at site of injection). Intramuscular injection three-hourly, most usual method, 10—20,000 units at each injection or continuous drip into outer muscles of the thigh (rate: three drops a minute). Occasionally water logging or inflammation around needle can occur.

Intrathecally, given in meningitis.

Intratibial—into bone marrow for infants.

Locally to cavities, penicillin powder down drainage tube in wounds and osteomyelitis.

Locally to eyes—drops or ointment.

Locally to mouth—pastilles under tongue.

In severe cases up to one million units can be given, while a few thousands may suffice for local conditions.

Types of Cases Treated.

(1) BATTLE CASUALTIES.

A penicillin control unit was sent to Italy in September, 1943.

General or systemic treatment:

(a) Compound fractures.
(b) Amputations.
(c) Severe hand injuries.
(d) Multiple soft-tissue wounds.
(e) Brain wounds.
(f) Gas gangrene.
(g) Chest wounds—penetrating with hæmothorax (difficult to treat because of air in chest cavity).
(h) Septicæmia of whatever cause.

Local treatment:

Septic wounds of head, face, eyes, chest and soft tissues generally.

(2) CIVILIAN CASES—treated since September, 1944.

General or systemic treatment:

(a) Staphylococci septicæmia of whatever source.
(b) Osteomyelitis—*acute*—limbs, good results if early treatment obtained.

Chronic—poor result because sinus usually contaminated by a mixed infection.

(c) Staphylococcal—breast abscess, meningitis, orbital cellulitis, pericarditis, brain abscess, jugular phlebitis following mastoidectomy.
(d) Pneumococcal and meningococcal meningitis.
(e) Streptococcal puerperal septicæmia and septic abortion.
(f) Sulphonimide resistant gonorrhœa, also syphilis.
(Three-hourly I.M. injections of 20,000 units each; five injections, making total dose of 100,000.)

Danger, that while treating gonorrhœa one may mask the symptoms of syphilis where both exist at same time. If syphilis is treated with penicillin in the early stages a massive dosage is givin, three-hourly intramuscular injections for four to eight days, making a total of 1,200,000 or 2,000,000 units. Babies with congenital syphilis may also be treated but care is required.

(g) Septic arthritis.
(h) Infected gangrene of foot.
(i) Anthrax.
(j) Actinomycosis.
(k) Appendicitis with peritonitis.
(l) Acute and sub-acute bacterial endocarditis.
(m) Streptococcal tonsillitis, quinsies, etc., but not thrush.
(n) Prophylactically in air-raid casualties.

Local treatment:

(a) Empyema (early treatment essential), bronchiecasis, osteomyelitis.
(b) Staphylococcal skin infections, e.g., sycosis barbae (ointment daily or solution of penicillin sprayed on).
(c) Staphylococcal carbuncles and boils.
(d) Acne, eczema, cellulitis.
(e) Eye infections. Most interesting is chronic blepharitis, which is resistant to other forms of treatment.
(f) Mouth, gums and throat, e.g., Vincents' angina, penicillin pastilles used.

Impetigo sores heal quicker with penicillin than with other forms of treatment.

Although good results are obtained from the use of penicillin, this does not do away with the need for adequate surgical treatment. When used it must be given regularly as it is rapidly excreted from the system by the kidneys. In the use of penicillin ointment at home care has to be taken that infection is not carried back into the ointment by the applying finger.

THE MEDICAL ASPECTS OF DELINQUENCY

By F. H. Brisby, Esq., M.B., C.H.B.,
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CRIME and delinquency are practically synonymous terms, with the gentle difference that to-day the term delinquency is usually reserved for the juvenile and adolescent forms and the less serious offences, and the term crime reserved for major offences. Crime, or delinquency, may be defined as an act or omission forbidden by law under pain of punishment.

To-day, some people, whose view cannot be altogether ignored, hold that most crime should usually, if not invariably, be regarded as a manifestation of mental or physical abnormality, or, as Butler dealt with in "Erewhon," as a disease. This is an attractive theory with vast possibilities for society washing its hands very largely of the victim, the victim being, of course, the perpetrator. In point of fact, it is a view very difficult to sustain.

East has shown that the crime rate of the population is at its height at about the age of thirteen, and this shows a decrease in successive years, and that the incidence as between male and female is as eight to one, but there is no evidence to show that the abnormality of the male of fourteen years is greater than that of the male of twenty-six years, or that eight males are mentally abnormal to each mentally abnormal female. This would follow if you accept crime as *ipso facto* a manifestation of mental disorder.

It may be taken for granted, from our experience and research, that there is a much lesser incidence of mental abnormals among offenders than is generally supposed. We have no figures as to the proportion of our prison population who are sub-normal or neurotic, but it has been estimated that

the proportion of normals among the prison population is at least eighty per cent. In this respect it should be remembered that of all those convicted in this country only about three per cent are sent to imprisonment, penal servitude or Borstal.

However, a knowledge of those abnormal states that may cause the sufferer to offend against the laws of society or may lessen his powers of control, is very necessary if justice is to be done to the patient and further crimes are to be avoided. Any treatment that ignores the cause is nothing but quackery, and, as in any form of treatment, the earlier it is applied the better, for there is much more hope of treatment being successful.

It is for this reason that it is of prime importance that social workers should have some knowledge of those abnormal mental states that may predispose to abnormal conduct. They do not need to be expert diagnosticians, but just as the careful lay observer may recognise the possibility of a person suffering from tuberculosis or other physical ailment, so he or she should be able to recognise those cases where there exists the possibility of an abnormal mental state causing aberrations of conduct.

Of the abnormal mental states which may cause delinquency the two easiest ones are, of course, certifiable mental defect or insanity. These cases do not constitute a very large percentage of delinquents, but it should be remembered that I am only speaking of mental defects or insanes who are certifiable as such.

Let us take the case of mental defect first. It often amazes people that this type of mental short-coming was only recognised by law by the M.D. Act of 1913. Before that, if a person's intelligence was very low and his conduct positively or aggressively anti-social, he was certified as a lunatic if institutional care, other than a prison, was needed. (Quote Lancaster and the P.M.O'.s in this respect—the effect on prison population.) This leads one to hope that with advancing knowledge of psycho-pathological conditions more offenders may be treated otherwise than by imprisonment.

It will be known to most of my listeners that there are four classes of defects named under this Act, the idiot, the imbecile, the feeble-minded person and the moral defective. Only the last two need our consideration as the first two are so obvious that institutional care is seen to be essential at a very early age and they are harmless. The other two classes present some difficulty in dealing with delinquents.

On this question of mental defect, many people think that an I.Q. sufficiently low is enough for certification under the M.D. Act. I think this is wrong, as many people of low intelligence in the higher grades may be good, useful, and law-abiding members of society. They are good hewers of wood and drawers of water, but they may need a lot of help and guidance. I agree that there are certain sociological difficulties, e.g., propagation and so on that fall within the realm of the eugenist. Some people suggest sterilisation, but that is a question outside my realm, except that sterilisation will not make them law-abiding citizens, and there are other difficulties such as the doubtful legality of the operation, the fear of the spread of venereal disease, the religious difficulty, the argument that a

mental defective may give birth to a normal child, and so on. I simply mention these points to show that the matter is not one easy of solution.

I think that segregation becomes imperative when their conduct becomes dangerous or positively anti-social. I personally consider wise the segregation of even quite high M.D.'s when the offence they have committed is serious, e.g, sex offences. Their sex instincts usually develop late, but the victim is very often young and even one offence like this in what has been considered a comparatively benign M.D. up to the age of eighteen or so may justify his certification. Other crimes often associated with mental defect and that may justify or call for segregation are arson, wilful damage, and so on.

The fourth group of M.D.'s, the moral defective, is, as our powers of diagnosis and knowledge of psycho-pathology improves, a rapidly diminishing group, yet of all groups it seems to be the one in which lay people want to place a large proportion of our criminal classes, particularly the recidivist class. More and more we find that with our recognition of other pathological mental states the number of real moral defectives is really quite small. They are certainly very hard to define . . . they break all the commandments. . . . They are morally blind . . . they have a plausible glib facile excuse for all their misdeeds; their intelligence is only very little below the average, and this is often disguised or masked by an exceedingly high vocabulary. No sinner in this world can more easily pose as a saint. The great point is that punishment has no deterrent effect on them at all.

However, it is not so much the certifiable mental defective that worries us as the backward or retarded group, which Burt aptly defines as those who, "in the middle of their school career would be unable to do the work of the class next below that which is normal for their years."

The trouble is that whilst labour conditions are easy and work suited to them can be found, they will not offend, and whilst they are apparently well-adapted, their adaptation and competence is precarious. Take away their good environment and they are often found to be as bewildered, incompetent and unstable as a true defective. Their instincts, sex, acquisitive, etc., are ill-controlled and they soon offend, and, having lost step with society, their rehabilitation is a matter of great difficulty.

Their ability to distinguish between right and wrong develops late if at all, or more often imperfectly. They lack in powers of attention, memory, perception and judgment and foresight They are slow to profit by experience. They lack will power and are often the pliable tools of the unscrupulous.

They are very prone to commit sex offences. They are often especially disturbed by the physical upset of adolescence, as they fail to understand the explanations and sex instruction given them, and they are often led into trouble by those of better intelligence. In many cases their sexual development is disproportionate to the rest of their development, consequently there is a very large proportion of retarded intelligence amongst prostitutes, those who have V.D. and who have illegitimate children.

Here, I think, lies one cause for the confusion of thought among those people who say that prostitution is almost entirely due to economic conditions.

We may now turn our attention to disease of the mind. I do not think that certifiable insanity calls for much discussion, but the lesser forms of mental dysfunction do call for a very great deal of discussion and thought. I am not going to bother you with the legal definition of insanity and criminal responsibility, the McNaughten rulings; the courts seldom apply them in exactitude, except occasionally in major offences to put the brake on the zeal of the mental expert, but the type of case that does cause a great deal of worry and anxiety, both to the lawyer and the doctor, are the border-line cases, e.g., the early or imperfectly remitted schizophrenic or other psychotic, such as the cycloid, the paranoid, epileptic states, and so on, who do not reach the stage of certifiable insanity yet whose abnormality of conduct is clearly attributable to their abnormal state.

My personal difficulty in dealing with these types who have not reached the stage of certifiable insanity and who, maybe, never will, is that the courts often ask what they are to do. . . . The difficulty of getting them in a V.P.'s. . . . The B.O.C. attitude. . . . An interesting point is that they do very well in prison owing to the sheltered life, an open hospital, and the opportunity of graded work, but then they are turned out into the stress of the outside world which they are ill-fitted to stand. It is a pity to see these cases doing well in prison and then to see them discharged into the very environment and subjected to the same stresses that predisposed to their break-down. Where positive treatment can do anything for them we administer it, e.g., shock-therapy, deep analysis, narco-therapy, etc.

The types that give the social worker the most trouble probably belong to what are known as the affective psychosis, which include the manic-depressive psychosis, involution melancholia, and reactive depression. These three conditions are of particular importance in considering female delinquency. All are characterised by depression, but it is not the depression referred to in lay parlance. It is a disorder of mood which may have been precipitated in the first place by an emotional shock, but it outruns the normal period of depression which might be expected. It outruns it in duration, depth, and severity. The patient is no longer responding to the situation in the external world but to inward factors, factors which may be very obscure and they appear to be "worrying over nothing."

A depression of this type may be said to exist when the mood disorder occurs in the absence of any emotional trauma, or becomes disproportionate to the trauma or persists unduly after the trauma.

The involution melancholia are also a fairly common cause of vagaries of conduct in females. It is associated with the climacteric in women; there is considerable endocrine imbalance and dysfunction, the emotions are upset, control is lessened, and to the patient it seems that life very often is ending (i.e., fruitful and productive life), and in many cases this depression and upset is a contributory factor in such cases of delinquency as shop-lifting . . . a new hat, the female panacea. . . . .

When the depression is deep very often ideas of reference develop. They become very suspicious, turn against their husband or children (who

have by this time other interests than home and are independent, adding to the mother's loneliness and feeling of neglect, thus intensifying her depression). For this type of case the answer seems to lie with the biochemist, and increased knowledge of the ductless glands, but, in addition to any medication, they need above all kindness, rest, and toleration.

And now we come to the next and most difficult group of all, the psychoneurotics. They have an innate psychic weakness that renders them unable to stand up to stress. The mental disorders involve only a partial change in personality, and the patient has some insight into his or her condition, the realities of life, and his short-comings. Normally, his conduct may call for no comment, but criminal activities in some specialised direction may result from the disability present. In the criminal psychoneurotic there is a canalisation of his anti-social behaviour and it may be associated with an anxiety state, hysteria, neurasthenia, or an obsessive compulsive state. Naturally all these abnormal states and reactions will vary in incidence and severity with the patient's environment and the stresses to which he or she may be subjected.

Of all these states, morbid anxiety, hysteria, and neurasthenia seldom caused prolonged social inadaptability, are easily recognised by the psychologically minded physician and, given suitable environment and removal of the causes and treatment, they do not call for much comment, except where drink is used to solve the conflict. Drink in such cases is symptomatic and not causative, but it may become a habit, and the delinquency attributed solely to the underlying cause being quite obscure.

The factor of drink in crime must not be confused with alcoholism —that most prolific cause of recidivism in females. The most recent figures available show that:

> In 1941 the number of women received into prison on conviction was 3,899, of whom 907 had been sentenced for drunkenness and 2,992 for other offences. Of these 907, 803 had been previously convicted. Drunkenness would certainly appear to be or form the hard core of the female recidivist problem.

Alcoholism is almost invariably an effort to drown a mental conflict, very often anxiety or neurasthenia; sometimes to counteract a sense of inferiority. It is such a useful and temporarily potent and easily obtainable means of escape not only from one's own self but from the sheer misery of existence which may be due to others, that it is resorted to more and more, becomes a habit, and is soon indispensable. It is never, or hardly ever, other than symptomatic, but when it becomes such a nuisance as to bring the victim within the law, cure of the underlying cause is wellnigh beyond human power.

The obsessive compulsive group are important from the sociological point of view, in that the condition is difficult to remove, and if it tends towards crime the illegal act is likely to be repeated irrespective of punishment. This type tempts one to flirt with the question of irresistible impulse, but I am not going into that beyond to say that it would be a very great

benefit if someone could devise a reliable test which a jury could understand for measuring the capacity of an accused person to control his conduct in a given situation.

The importance of this group for us to-day is that in extreme cases the conduct of the patient is, in certain isolated actions, mad in the lay sense yet in every other way they are apparently quite sane. Again, the compulsion may vary from trivial and quite innocent acts to acts of the gravest type. Many normal people have innocent and minor compulsions. In the more severe type that brings the patient within the law if he gives way to it, the agony the patient goes through hiding and trying to control their compulsion, often for years, is intense. Their very degree of insight into the folly or enormity of their conduct adds to their fear of what they know is a losing battle.

It is to Freud that we owe our conception and hopeful line of treatment in these cases, although once again treatment must begin very early. Indeed, in many cases it must or should begin with the parents. I often think that a truer title for our Child Guidance Clinics would be Parent Corrective Clinics.

These cases are hard to define in non-technical language, but this sort of mechanism should be suspected where one gets an otherwise good child from maybe a too good home committing some sort of offence, such as stealing, and standing out prominently is the fact that the offence seems at complete variance not only with the child's general character but with his background of probably careful solicitous parents. It is very often a fear of something that seems very corrupt to the child, probably a masturbation or some other biological wish. In his attempt to attempt to get away from this fear he may substitute some less-grave form of wrong-doing, and he chooses it because it is less heinous, and if it is stealing he chooses it as this lesser evil; he does it to avoid the deadly sin of masturbation and yet at the same time satisfy his innate wish to do something wrong. His compulsion becomes sublimated into a lesser evil.

Hysteria cannot be dismissed lightly. I am not going to deal with the hysteria so well known to all of us, the type who throws a fit or screaming attack or emotional storm pretty much on demand, but I want you to consider a rather less obvious type, the hysterical personality. It is characterised by an infantile or immature response to the demands of life and by an inability to face the adult level of reality. They are, as a result, egotistical, very suggestible, easily swayed, unstable emotionally—loving and hating by turn, their emotional switches being quite unpredictable. They are full of fantasy and romance, and will commit crime with peculiar effrontery in the attempt to make real their world of make-believe Self-pity is always a marked feature and they will show great moral audacity in committing an offence, breaking down into sobbing objects of penitence when detected and punishment seems imminent.

It will not have escaped your notice that these reactions, as in other conditions I have mentioned, are present in all of us but to a lesser degree and we keep them in control.

Hysteria is not found before puberty, but the mechanism for its development is laid down in early life, most often by the parents and the home environment.

In conclusion, may I attempt to summarise by saying that the one necessity for treating those cases of delinquency that may be due to abnormal mental states lies in investigating and correcting where possible faulty homes and environment. Also, in the early detection of the possibility of the abnormal mental state existing and being a factor in the development of anti-social tendencies. The early recognition, treatment, and rehabilitation of the individual personality deviations outlined so very briefly above may prevent the commission of major as well as minor forms of crime. A great deal of this work will have to be done in the first place by the enlightened social worker and the medical psychologist and the greater our knowledge of men and women as well as of psychiatry and psycho-pathology the greater will be our contribution to the well-being of the State and the offender.

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THE UNMARRIED MOTHER

By Miss L. E. BASHFORD,

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THE term "unmarried mother" includes women of all classes, education and mental ability. It is interesting to consider firstly the past treatment of the unmarried mother and the development of public thought and opinion on the subject.

Under the old Poor Law Act the only provision for the unmarried mother was the workhouse and the children of such mothers were termed "workhouse brats." This attitude of mind gradually altered. The earliest sign was in the foundation of the Foundling Hospital in the early 18th century. Thomas Coram, late Governor of Newfoundland, stirred up public opinion and opened this Hospital or Home for the destitute child. This was the start of a whole system of a new kind of work in this country. France already had convents where such children could be cared for.

A few years after the Foundling Hospital opened, Samuel Johnson published in the Rambler a soliloquy on what happens to the mothers of Foundling children. This letter was provocative and resulted in a subscription list being opened to found a home for Magdalenes.

The whole idea behind the Poor Law was merely to provide some place where the mother could go for the child to be born, but she was expected to get out as soon as possible to earn her living. The Church also took a censorious attitude, visiting in the sinner the wrath against the sin, and it was only gradually that a better spirit prevailed. Similar institutions to the Foundling Hospital arose under the auspices of the Established Church.

The suffrage movement indirectly helped on the cause of the unmarried mother. At Oxford a woman was in the dock charged with infanticide, but no charge was preferred against the father of the child. Josephine Butler took up the cause of this young woman and led an agitation for an equal moral standard between men and women. Much opposition was aroused, but the work went steadily forward. Public opinion changed, and between 1875 and 1900 some hundred or more institutions were opened to care for the "fallen woman," both before and after the child was born.

Maternity homes outside the province of the Public Assistance Committee were opened, assisted by grants from the local authority. The first Rescue Home in Hull for girls in need of care was opened in 1885. An outdoor worker also visited the wards of the Public Assistance Institution to help young girls who were being thrown together with older women of undesirable influence. An association for Rescue and Preventive work was started in every diocese. In 1915 the Yorkshire Association opened a Maternity Home for unmarried mothers, where young girls could be cared for for a period before the baby was born, and for six months afterwards. The aim of all such homes was to seek to place the mother on a different footing altogether, with a better way of thinking and living. Here was secured to her proper feeding and ante-natal care combined with a proper way of life. Most of these Maternity Homes run by the Diocesan authorities have now adopted the Rushcliffe scale and this has eased staff difficulties. They are specially helpful for irresponsible girls with no home background.

Hostels have also been established where girls can live and look after their babies and go out to work.

Moral workers are agreed that the unmarried mother and child should be kept together, and it is hoped that the State will also take this view. As this moral welfare work, now carried on by semi-voluntary help, develops, the State will be taking more responsibility for it, as it sees that a need is being met. There is already a tendency for the voluntary side to recede, witness the care of illegitimate infants. In Circular 2866, issued in October, 1943, to all Local Authorities, it was made incumbent on them to make some provision for all such. Hostels are also being run by the Ministry of Health for unmarried girls from the Forces.

Under the Bastardy Acts the unmarried mother has the right of appeal to a Court of Summary Jurisdiction for an affiliation order against the father, the onus being on her to prove the paternity of the child.

It is interesting to note that in Scandinavian countries the onus is on the man to prove that he is not the father.

To help girls in the problem of proving paternity, an honorary solicitor of the Moral Welfare Association will give help and advice. When a court has been assured of the paternity they have to consider the means of the man against whom the order is made. A usual sum is round about 10s. weekly till the child is 14 years or 16 years old.

The moral welfare workers do not encourage adoptions. They consider that a certain amount of damage is suffered by the unmarried mother when she gives up her child and the blank thus left in her life is often filled by new difficulties. Adoption of the first baby is often a contributory factor to a second illegitimate child. To enable a mother to keep her child, both Dr. Barnardo's and the Waifs and Strays Association allow grants to foster-mothers who look after the children while the mother is working. The money is paid through an intermediary, who makes a monthly report on each case. Grants are also made to enable such children to take advantage of higher education. In Birmingham such a scheme is run by the Local Authority, who approve and pay their registered foster-mothers.

During this world war, with men away from their womenfolk, the freedom and loneliness and new place of women in the Forces, all this has resulted in a great deal of promiscuity. A different attitude is being adopted towards the unmarried mother, but it is still not right that children should be deprived of a secure home background. Public opinion needs to be built up on the side of the illegitimate child.

Young children in school found to be pregnant present a delicate situation. The correct procedure is to advise the Head Teacher to communicate with the Director of Education immediately and to say as little as possible to the child herself. It is also desirable that the matter is not discussed with the teacher as the rules of evidence are such that quite innocent remarks may result in a distortion of the truth.

PROBLEM FAMILIES — SUBJECT FOR DISCUSSION

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DURING the last two or three years there has developed throughout the country a widespread interest in the subject of Problem Families. In view of the tremendous upheaval in family life consequent upon the war and the newly awakened interest in social medicine, this interest is not really surprising. "Our Towns" revealed to the general public that there is perhaps more truth in the saying that "One half of the world does not know how the other half lives" than they had hitherto realised.

These families masquerade under a variety of names — problem families, social problem families, derelict families, handicapped families

and unsatisfactory households. Nevertheless, there is little doubt in the minds of health and social-welfare workers of their chief characteristics. My purpose to-day is to give you a brief outline of this subject, point out some of the major issues involved and give you some of the suggestions that have been made for the improvement of these families.

In July of last year I defined these cases as "Families with social defectiveness of such a degree that they require care, supervision and control for their own well-being and for the well-being of others," and then described some of their main features. "Almost invariably it is a large family, some of the children being dull or feeble-minded. From their appearance they are strangers to soap and water, toothbrush and comb ; the clothing is dirty and torn, and the footgear absent or totally inadequate. Often they are verminous and have scabies and impetigo. Their nutrition is surprisingly average—doubtless partly due to extra-familial feeding in schools. The mother is frequently substandard mentally. The home, if, indeed, it can be described as such, has usually the most striking characteristics. Nauseating odours assail one's nostrils on entry, and the source is usually located in some urine-sodden, fæcal-stained mattress in an upstairs room. There are no floor coverings, no decorations on the walls except perhaps the scribblings of the children and bizarre patterns formed by absent plaster. Furniture is of the most primitive, cooking utensils absent, facilities for sleeping hopeless—iron bedsteads furnished with fouled mattresses and no coverings. Upstairs there is flock everywhere, which the mother assures us has come out of a mattress which she has unpacked for cleansing. But the flock seems to stay there for weeks, and the cleansed and repacked mattress never appears. The bathroom is obviously the least-frequented room of the building. There are sometimes fæcal accumulations on the floor upstairs, and tin baths containing several days' accumulation of fæces and urine are not unknown.

"The children, especially the older ones, often seem perfectly happy and contented, despite such a shocking environment. They will give a description of how a full-sized midday meal has been cooked and eaten in the house on the day of the visit, where the absence of cooking utensils gives the lie to their assertions. One can only conclude that such children have never known restful sleep, that the amount of housework done by the mother is negligible, and that the general standard of hygiene is lower than that of the animal world."

Such, then, are our Problem Families.

I think we can take it as certain they exist, and though this picture that I have tried to depict to you is seen only in the worst cases, you are probably familiar with many families where conditions approximate to this description.

Four questions immediately arise. How many such families are there throughout the country and what is their distribution ; are they a product of town life or are they seen also in country areas? Secondly,

what are the causes that make for these problem families? Thirdly, what may be the consequences to the individual members of such a family, to their neighbours and to the country as a whole? Lastly, what are the possible remedies?

All those who have written on this subject are agreed that the first task towards a solution is the sizing-up of the problem. As I pointed out in my previous paper,[1] there are no national statistics, and here lies a field for study which, with time and patience, would probably yield most fruitful results. The Rotherham figures were not the result of a specially conducted investigation, but were compiled from the records of health-visitor cards. For several years it has been the practice of the Superintendent Health Visitor in Rotherham to register all these families ; information concerning them is considerably more detailed than that concerning an ordinary family, and extends over a longer period. It is, therefore, difficult to compare the findings in problem families with a control group from the rest of the population. Martin, in 1943, published an article on " Child Neglect,"[2] and this is a subject which is closely allied to—indeed, is a vital part of—problem families. In it he said : " It is unfortunately impossible to give any figures indicative of the incidence of child neglect. There is no authority responsible for the collecting of statistics. . . . ." He went on to point out that " the first essential of any scheme is that there should be some person on the central staff of the health authority to whom all cases may be reported . . . and who can devote a portion of his time to the administration and supervision of the scheme." Whoever is made responsible for the scheme should work in close co-operation, not only with members of the health staff, but also with housing managers, probation officers, school teachers, the public assistance officers and the local inspector of the N.S.P.C.C. Information should be widely sought and freely exchanged. It is not until we have a body of information from many different areas throughout the country that we can proceed to elucidate with any accuracy the root causes. From the Rotherham figures two possible ætiological factors present themselves. One is feeble-mindedness, real or apparent, in the parents ; the other, parental defect of character. In about one-fifth of our cases the mother showed low mental standards—either actual feeble-mindedness or mere dullness or backwardness. Martin, in a personal communication, says that his " impression (based on a sample which is not representative) is that in over 50 per cent. of the severest cases of neglect either the mother or the father is mentally subnormal," and Dr. Jane Miller, of Darwen, is also of the opinion that the most urgent necessity in dealing with these cases is the better ascertainment and segregation of mental defectives. Similarly, Dr. F. V. Soothill, Medical Officer of Health of Norwich, writing in his annual report for 1942 gave the opinion that " they are of a poor mental type, whether by an underlying mental deficiency, though they may not be actually certifiable, or with some ' kink ' making it difficult for them satisfactorily to manage their own affairs." On the other hand, Dr.

S. W. Savage, Medical Officer of Health to Herefordshire County Council, in a personal communication, said: "From what I have seen so far it appears that many of them are not so mentally defective as some observers suggest, but their slackness arises partly from weakness of character (i.e., not weakness of intellect) and the lack of opportunity for being house-trained when young." Yet another possible ætiological factor is mentioned by Miss Cooper Hodgson in a letter to "Woman Health Officer."[3] She says that in her "long experience (as superintendent health visitor of a staff working among over 200,000 children under 14) in a very large percentage of handicapped families the main factor is the poor health of the mother." The Bishop of Sheffield, who is interesting himself in these cases, mentions three posisble causes[4]—lack of means and bad housing, criminal neglect on the part of the parents and mental deficiency in the parents.

Here, then, we have several possible lines of enquiry. It seems that in our present state of knowledge the ætiological factors may be divided into four principal groups.

(1) Defects of intellect in one or both parents (i.e., mental deficiency or dullness);
(2) Defects of character in one or both parents (including viciousness or weakness);
(3) Defective training of the parents, and, more particularly, the mother; and
(4) Economic.

I would place in the economic group, families in whose case the father is unemployed or dead, cases with low family income (either absolutely or relatively on account of an excessive number of children), and cases in which there is chronic ill-health in the mother. There is no doubt that in many of these families more than one ætiological factor will be present, but it is likely that one or other will predominate.

The first three groups are of the greatest interest; they are, to my mind, fundamental and the most difficult of solution. An editorial in the "Medical Officer"[5] pointed out recently that, in reality, the problem family is "the extreme end of a more general problem—that of poverty and the degradation that poverty so often brings." This may well be true, and doubtless many of those problem families who fall into the economic group will fairly rapidly cease to be problem families if all the suggested social legislation becomes a reality. But no social legislation so far proposed can make much impression on those families in the first three groups where the faculty of self-help is so conspicuously absent.

A further question arises when considering ætiological factors. Have these families always existed in these deplorable conditions, or have some of them gradually sunk below the general level through circumstances beyond their control—such as death or unemployment or illness of the father or chronic ill-health of the mother, or by finding the strain of an increasing family too much for their ability or their finances? I find

it difficult to believe that a family which has once lived in a decent, hygienic manner with a satisfactory routine can ever sink to the depths of these problem families. Surely it is more a question of what prevents the family from rising above this level than what causes them to be pulled down to this level.

When we consider the consequences of problem families, there are certain facts that are definitely known, but a good deal which is in the realm of speculation. We know, for instance, that the children are usually filthy and verminous, and often suffer from impetigo and scabies. They do not, according to accepted standards, have sufficient sleep. We know that their houses are lacking in the common necessities of life and are filthy and usually bug-ridden. That they are a source of great nuisance to decent neighbours, to social workers in all spheres and to their school teachers is very widely agreed. But there are many other facts concerning these families still to be elucidated. It has been said that mortality and morbidity in children belonging to these families is high, that a notable proportion of child delinquents comes from these families, and that many of the children are mental defectives. But, so far as I am aware, there is no actual proof of this. There has been no statistical enquiry comparing these various factors with those in a control group of families taken at random.

From the Rotherham figures, it appeared that the average number of children in these families was high, and the question arises is this type of family propagating itself to a greater extent than other families? Some observations of Titmuss[6] are very much to the point on this question. He says: " It cannot be regarded as wise or healthy if a considerable section of the future population is being recruited from a number of very large and very poor families. Is this the position in England to-day? Are we, or are we not, confronted with a situation in which the economically under-privileged are producing a disproportionately large number of babies, while those more favoured with a good environment are unduly restricting the size of their families? " Titmuss goes on to say: " The answer, in short, is that we do not know." Nor do we know for certain that the occupants of these households form the reservoirs for infectious disease or the breeding grounds for juvenile delinquency. To answer these questions will necessitate prolonged and widespread enquiry.

In the past, these families have been regarded as an inevitable accompaniment of our national life. After many years of unsuccessful endeavour to improve their lot in life, health visitors, sanitary inspectors and other social-welfare workers have written them off as a dead loss. Fortunately, in recent years, there has been a re-orientation in our approach to their problems. In several of our towns the process of reclamation and salvage has begun, and the hope has been expressed that we may " even turn our liabilities into assets."[7]

Before dealing with the more detailed suggestions that have been made for alleviating their lot in life, let us consider for a moment the

more general aspects of a remedial nature. There is no doubt that if, in the post-war years, the Government are successful in their full-employment policy, and the proposals for social insurance are fully implemented, and if adequate children's allowances are given and the best available medical advice and treatment is made accessible to every man, woman and child, then it is highly probable that many of the families in the economic group would cease to be problem families. But what of the derelict family whose root cause is due to defect of intellect, character or training in the parents? Some other method of approach is necessary in these cases.

The Education Act, 1944, promises education suitable to the aptitude and ability of the individual child, and regulations made under the Act have already been issued on handicapped children, making their ascertainment and provision for their special education a duty of every local education authority. In the long run, no doubt this will help to prevent children from falling by the wayside and ultimately becoming the parents of future derelict families. But it is wearying and disheartening to ascertain, year after year, educable mental defectives and recommend their admission to a special school, knowing quite well that all the schools are full and have long waiting lists. In the meantime, the individual child suffers and their aggregate influence will be felt by the country in the years to come.

It is possible that in the distant future, by a more enlightened outlook on marriage guidance, contraception and sterilisation, there will be a more conscious selection of marriage partners with a view to the consequences on the next generation. It is significant that the Church should be posing questions along these lines: [4] " . . . . do the principle of freedom and the rights of man require that subnormal adults should be allowed to contaminate a neighbourhood with their sordid, filthy houses and to bring into the world children for whom they have no care or affection? "

Nursery schools, the training of girls in housecraft, and boys and girls in parentcraft are other long-term policies which in due course will show rich dividends. As Professor Crew has pointed out: [8] " In a modern industrialised society there is a great need for the education of potential parents in their responsibilities and duties, for a knowledge of the techniques of raising offspring is not instinctive in us—it is an acquisition to be obtained only through serious study."

What of our short-term policies?

I agree with Martin[2] that the first essential is for some person on the central staff of the Health Department to be given the responsibility of forming a register of these families and to whom all information should be given. I think it should be a member of the Health Department and not the housing or any other department, because so many of the problems are of a public health nature. Further, the information concerning these cases lies for the most part in the Health Department, and more particularly in the records of health visitors. The co-operation

of housing managers, school teachers, probation officers and the inspectors of the N.S.P.C.C. should be sought. As Martin points out, the "administrative medical officer" (who, he suggests, should be the responsible person) will "rapidly become an expert whose advice is invaluable." His interest will also stimulate nurses and others having to visit these homes.

Norwich provides us with two valuable suggestions. Here, an "Unsatisfactory Households Sub-Committee" has been formed. Such a committee can help to bring to the notice of local government councillors the black spots in their areas and enable them to understand some of the difficulties encountered by their officials. Opportunity is provided for discussion and suggestions can be made for the improvement of these families. In the formation of such a committee there should be representatives from the Public Health, Housing, Education and Social Welfare Committees, for these families are no respecters of compartmentalism. Nor should the members of such committees be allowed, if they are also magistrates (as some of them are likely to be), to sit in judgment when dealing with cases of child neglect brought before the local court, for they are definitely interested parties and would find it difficult to administer impartial justice.

The second suggestion from Norwich concerns the practical help that can be given in these cases. Their Unsatisfactory Households Sub-Committee appointed a "Home Adviser" to visit these households and supplement and expound the advice already given by the health visitors. She has no powers of entry, and her success is largely dependent on gaining the confidence of the family. It is clear from the nature of her duties that exceptional patience and fortitude must form part of her qualifications. Her hours of duty are not such as would be generally accepted, since her visits must be carried out at times when, by practical demonstration, she can be of most value. It is of far more value to give the mother a demonstration in bathing a child, cleaning the house, cooking a meal or mending clothes than to give her advice on these matters and then walk out of the house cherishing the pious hope that the advice will be followed. Improvement in some of their families has already followed this innovation. For most towns it is probable that a staff of home advisers would be necessary. The Home Adviser is not to be confused with the Home Help. The primary function of the Home Adviser is to advise and to educate the mother in the rudiments of housewifery, in the hope that by example the mother will be encouraged to do likewise. The inauguration of a scheme of Home Helps might prove advantageous in some cases, but there would be the danger that too many mothers would regard her for what she is—a paid helper—and do even less than before to run the household satisfactorily.

Opinion is divided on the question of whether, in some of these cases, it might be advisable to segregate the families in special colonies. The most potent argument in favour of this suggestion is that supervision and training of the parents could be more easily arranged and

they would cease to be a nuisance to their neighbours. A form of colonisation has been tried in Holland, Italy and Austria with varying results. Unless the co-operation of parents could be obtained, such a course would necessitate new legislation. Dr. Frazer Brockington has suggested[7] that some of the existing army camps might be utilised for such a purpose, or that a small start might be made by local authorities providing a group of houses to which families could be removed and kept under skilled supervision. On the other hand, it has been pointed out that such families would be branded,[9] and all hope of reclamation would be lost. They would become the pariahs of society. Nevertheless, to my mind, local authorities should, in future housing programmes, be reluctant to rehouse a problem family on a new housing estate without prior evidence that they can achieve and maintain over a period a minimum hygienic standard.

It is being increasingly realised that it is folly to prosecute parents for child neglect when, in reality, they cannot, owing to lack of ability, be held strictly responsible. When a mentally subnormal parent is sent to prison for child neglect, the State is, ironically enough, punishing the parent for its own deficiency. Committing a mother to prison, apart from splitting up the family—which most observers agree is bad from the child's point of view—is no real solution to the problem. It is not in keeping with the present-day attitude towards crime. If the parent must be deprived of liberty, by all means make good use of her time and train her until she is rehabilitated. I have never seen any figures published to show what percentage of parents sent to prison for child neglect are, after their discharge, prosecuted again for the same offence. I have been given to understand by an authority who should know, that second prosecutions are rare. But I should like to know if they are rare because of reluctance to be accused of victimising such families. In other words, does a prison sentence really have a salutary effect on such parents? In this regard, it was heartening to read recently that a woman who was found guilty of child neglect had been ordered to a Salvation Army home at Manchester for six months' training in home-craft and placed on probation for three years. The general opinion seems to be that cases of really vicious premeditated child neglect form a minority.

If this is so, why should the task of supervising these families be left, as it has been, to the N.S.P.C.C.? Everyone will agree that the work done by this society has been of the utmost value to the community, but have we not reached the stage when the State should be a more active participant? Can we afford to allow the fate of these families and their coming generation of children to remain in the hands of a society which depends largely for its existence on voluntary subscriptions? Can their inspectors give real service to the community when so many of them are overworked and underpaid and when so much of their time is occupied in raising funds to continue their existence? There is no doubt that in many areas, even though both

N.S.P.C.C. and the local authority may initiate prosecution, it has been left entirely to the N.S.P.C.C. Also, even though the local authority may be the prime mover behind the prosecution, they have found the society an excellent medium through which to conduct their case. But the reason for this lies largely in the local authorities' fear of appearing too officious and finding that the doors of its citizens become closed to its visitors. This fear would be removed by a more energetic interest in this subject on the part of the State.

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NATIONAL INSURANCE AND SOCIAL SECURITY

By Professor A. N. SHIMMIN, M.A.,

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THE question we are considering this morning is where the developments in social insurance are carrying us. First, the difference between private insurance and social insurance. In the former one enters upon a contract voluntarily, the latter is compulsory. Private insurance is selective, that is, one can choose the particular risk one wishes to insure against, e.g., accident, fire, death. The benefits to be obtained are "specified" and limited to the particular company which one chooses.

Although we use the term "social insurance," it is open to question whether it is an insurance at all. If the premium paid is not enough then the benefits are to be paid out of tax funds. It is certainly social if we accept the Beveridge axiom that "nothing is social unless everyone takes part."

The first approach to social insurance came by way of the particular care for aged people, the non-contributory old age pension. Between 1909—1914 the "Lloyd George" scheme came into being, dealing with the risk of unemployment. The idea was that this risk should be kept within as narrow limits as possible. It was tried out in particular trades, such as heavy industries

In the period between the wars the idea developed that a new way of securing social security would be to ensure a living wage and that income should be protected when the cost of living rose. Also that all the bits and pieces of social insurance, e.g., old age pensions, unemployment, workmen's compensation, etc., should be brought into one scheme with a unified plan and administration. Not as at present with some schemes contributory,

some non-contributory. Thus the Beveridge Report of 1942 sought to pull together all these essential ideas.

In considering the difference between social insurance and social security it is important to realise that social insurance schemes are "break-down" plans which do not materialise unless the risk occurs. Social security can only be achieved where there is an adequate, regular income and full employment. It is significant that Parliament declined to create a Ministry of Social Security, but set up instead a Ministry of National Insurance. If social security can only be achieved through continuity of sufficient income, it is therefore a question of how full employment can be maintained.

It is the fact of unity—of all participating—that gives national insurance its strength, in contrast to the idea after the last war—1920—of insurance by industry. That is a policy of letting each industry provide for its own risks in its own trades, e.g., the cotton industry providing for cotton workers, mining industry for colliers, engineering industry for its workers, ignoring the fact that each industry has different degrees of severity of risks. If the risks are borne *nationally,* then we *all* come in at *all* points to help each other. Which principles do we favour?

Unfortunately there is historical precedence for the former plan. Up till 1929 the Poor Law method was always to dispose of the problem locally, split it up into parts which each parish could administer . This idea carried on for the last three hundred years is in our very thinking. It is considered that the proper way to handle social problems is to hand them on to local authorities or sub-committees. Here comes the great challenge of the new scheme, to think and act *nationally;* to be sensitive, for example, to the unemployment problems of South Wales, Lancashire or Scotland.

Two other dominant ideas of the old Poor Law still tend to persist—that of preventing destitution and that of deterrence. If a person is helped, then that person must be submitted to the rule of "less eligibility." His position must not be as advantageous as that of an employed person.

Again, we still believe in deterrence; a condition or penalty is attached to help given. It is fairly certain that deterrents will be contained in the new schemes because the idea has been bred in us.

The new schemes are to be a mixture of the contributory and non-contributory systems. The unemployment benefit will be contributory but family allowances are to be a gift from the tax fund, while the new health service (when it comes) will also be paid for largely out of tax money.

It is estimated that the total expenditure will be £650,000,000, one third of which, some £283,000,000, will be contributed by the employer or employee. The balance is to be met out of tax funds. It is suggested that in thirty years' time tax money will be providing part of the cost of the social services. The tendency appears to be away from insurance, away from contributory benefits to State-provided benefits together with any controls which the State may think fit to impose. Does it matter? Does it matter whether the money is obtained directly by contribution or indirectly through taxation—tobacco, cinemas, petrol? Where there is a flat-rate contribution, where professional man and labourer pay the same rate, there are flat-rate benefits.

Another issue to be considered is that if one concedes the right of complete title to benefit when one is, for example, unemployed, then the scheme will tend to be completely non-contributory.

It may be asked, why all this talk of social insurance when in many instances private incomes are sufficient to meet risks as they arise? A larger principle is involved here. How far is the State to become the guardian of the individual? To have individual responsibility for earning a living was the doctrine of the nineteenth century—*laisser faire*. Is the development of social insurance going towards protection by the State (with the conforming to State demands) or individual freedom and the taking of one's own risks?

Dicey laid it down that social government depends on the strength of co-operation, that is, voluntary co-operation. What is ahead is a scheme that suggests that because of the flaws of *voluntary* co-operation it is better to lay obligation on everybody. Therefore the whole burden is laid on the State with mutual taxation. If this is so, shall we lose in the process something of the resilience of voluntary co-operation to realise certain projects?

What we must aim at is security against the devastating influence of industrial risks, not *social* security. That can only mature when the income is adequate to meet the needs of the family.

INSIDE THE CHILD-GUIDANCE CLINICS

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ONE often hears about the cures wrought at Child-Guidance Clinics, but it is seldom one hears *how* it is done. To visitors, children at these clinics appear to be playing about without rhyme or reason and in complete freedom. It is difficult for the onlooker to see how all this can be part of "child guidance." The term is an unfortunate one derived from American practice. These clinics are emphatically not places where either children are "guided" or where parents are given lectures or instruction on how to "guide" children. They are rather places for the treatment of nervous and maladjusted children.

What sort of children come, and why? All children attending Child-Guidance Clinics have essentially one thing in common: they are all emotionally disturbed and unhappy children. Often they have anxious unhappy parents, too. Obviously, children do not come themselves and say they are difficult or nervous or even unhappy. The usual thing that happens is, because of their disturbed emotional state, children misbehave, and someone complains about them; perhaps their parents, or they are referred by some agency, e.g., School Medical Service, Probation Officer, School-Attendance Officer or Teachers.

All these children need patience, time and skill to unravel their particular problem and set them on the road to normality. A boy's remark to the doctor showed how aptly he had grasped the purpose of the clinic when he asked, "Is that another boy you are going to make not unhappy?"

What are the kind of problems which present themselves at these clinics? Here are some examples:

Girl, aged five and a half years, referred by mother for persistent refusal to go to school.

Boy, aged six years, brought by foster-mother: wild, destructive behaviour which the foster-mother described as brain storms.

Girl, aged seven years, referred by School Medical Officer: attacks of screaming, nightmares.

Boy, aged seven years, with bed-wetting, nightmares and sudden rages, and so on through habit-spasms, tics, fears and behaviour problems, especially stealing.

How are these problems tackled in the clinic? It is necessary to find out the root basis of the peculiar behaviour and symptoms, and this cannot be done by giving either the parents or the children a *lecture*. Investigation must be carried on more deeply to discover what is going on in the child's mind and causing the symptoms. This, of course, means time and patience because of the child's defensive attitude. They withhold information until they have complete confidence in the person they are confiding in.

The necessary investigations are carried out, in a standard clinic, by a team of workers:

(1) Psychiatric Social Worker, who is specially trained to investigate the social background and especially the relationship existing between the child and his parents and the other members of the family.

(2) Educational Psychologist, who tests the child's intelligence (I.Q.) and estimates the character of the child. (A telling pointer here is the child's reaction to *failure*.) The psychologist is concerned with the attitude the child takes to its work, how much he tries, is he keen, etc.

(3) Psychiatrist, who is a *medical* psychologist. It is his job to try and find out what *the child* thinks about it all, his parents, his home environment, his school, his brothers and sisters and the children he plays with. Over a period of months, very often, he attempts to get the child to talk out his problems, his fears and his tempers and the like.

Of course, younger children cannot talk out their problems, and in their case the method of free play is used. A room at the clinic is set apart where the child has absolute freedom to do what he likes. There are no restrictions short of doing serious damage, and one may kick a ball about, scribble or paint on the walls, or make any kind of mess without hindrance. The ensuing behaviour often gives one the key to the turmoil going on in the child's mind. Through this method of free play he can work through a great many of his emotional difficulties. Some children take a long time to loosen up and are quite scared at first at the unwonted freedom. Others take to it straight away. As one small girl remarked on first seeing the play-room, "What a lovely room. There's no dignification about this room."

Another method is to encourage the child to draw, to put his fantasies on paper. The psychologist is trained to understand these drawings, for they can tell many an eloquent story of repressed fears and jealousies and mental conflicts about them.

From the use of these methods many an interesting story is elucidated. A typical one is of a boy who appeared in court charged with malicious damage: wilfully breaking milk bottles. To the magistrate's surprise and embarrassment, instead of being overawed by his position, he boldly declared that he would keep on doing it. The case was referred to the Child-Guidance Clinic, where our investigation revealed the following: The boy was attending the local high school, and was often in trouble for truanting. The psychologist reported that the boy had a lowish intelligence for high school work (I.Q. 109). He had obtained a scholarship, but as the work at school became harder and more advanced he was finding the whole thing beyond him and had lost interest. His truanting was a result. The P.S.W. obtained a history that a few years earlier there had been an accident in the street with this boy and another, as a result of which the other boy had lost an eye. Although it was firmly established as an accident, he was generally blamed for it by the neighbours, and from that time he was marked down as the bad boy of the district. Any trouble was laid at his door, and the boy felt the unjustness of the position keenly. To the psychiatrist the boy himself explained that he hated the neighbourhood where he lived and wished to move, but as no one took any notice he had broken the bottles as a protest and to draw attention to the injustice of his position. As a change of residence was not possible, the boy was sent out of the district to the Education Committee's camp school, where, also, the work was nearer his intellectual level. He has since settled down happily. When children who are emotionally disturbed can express themselves adequately, either by conversation, free play or drawing, then the symptoms resulting from the disturbed state are very often cured. Children lead a much more intense emotional life than adults, but whereas we have learnt to control ourselves, such control is difficult to some children. Once a child has worked off his repressions and can understand the situation he finds himself in, then there can be readjustments. There must often be a readjustment of attitudes all round, and mother and father must be made to appreciate the situation or predicament in which the child finds itself. Quite often the parents themselves need much help to do this for it is usual to find in cases that come to the Child-Guidance Clinic that the parents are thoroughly exasperated at the child's (mis)behaviour or alarmed or anxious at the symptoms, and quite at a loss to know what to do. Instead of exasperation or alarm there must be established genuine tolerance and understanding on which to build more healthy family relationships.

The value of the Child-Guidance Clinics to the Social Worker is that here is an institution that is ready to help in those awkward casese where ordinary simple social remedies fail to be effective and where trouble persists in spite of all one does to help. In such cases the deeper understanding and skill of the Child-Guidance Clinic may bring about an adjustment.

SOCIAL IMPLICATIONS OF THE FALLING BIRTH-RATE

SUMMARY OF LECTURE BY

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THE traditional view that this country is over-populated has its origin in the teaching of the Rev. T. R. Malthus, one of whose doctrines was that the power of population to increase is indefinitely greater than the power of the earth to give food. This has been proved a fallacy, for science and invention are continually adding to the margin whereby man lives. The world is now faced rather with the problems of organisation and distribution.

The population of this country is not falling at the present time, but a fall is imminent. The main cause of this is the fact that the population is an ageing one, and this abnormal age constitution must shortly lead to a steady increase in the death-rate. It is obvious that for many years society has lived on the fertility of the past.

If we accept the results of modern statistical technique, in 1970 the population will be at its present level, but there will be twice as many people over 60 years of age. We will then enter a period of rapid decline, and the end of the century will see a decline to about half the present population (approximately 23,000,000).

The net reproduction rate is at present 0.75, which indicates that if present trends remain unaltered the population must decline to the extent of one-quarter every generation (approx. 30 years).

It is a matter of historical fact that increased wealth has coincided, not with increase, but with a decrease in the number of children born.

The possible causes of the falling birth-rate can be enumerated as follows:—

(1) A higher material standard of living, with its greater opportunities for pleasurable expenditure.

(2) Increase of mobility. Homes are no longer places to be lived and worked in, but a dormitory where the worker sleeps.

(3) Generally higher standards of education which have set up new personal standards and new tastes.

(4) Children are no longer the material asset they were in the industrial revolution. To-day they are rather a source of poverty in many cases.

(5) The drudgery of housework, which ties a woman to the home.

(6) Low status of a domestic career.

(7) Emancipation of women.

(8) Large families are often regarded as "anti-social."

(9) The spiritual basis of the family has been lost.

(10) Influence of the films and amusements.

(11) Falling fertility.

(12) Venereal disease.

(13) Marrying old. A man may be unable to support a family until the age of highest fertility is past (c.p., the marriage veto laid on bank clerks).

The population problem is psychological and spiritual rather than economic and material. Man has lost, not the power, but the will to reproduce.

The remedies must concern themselves with removing needless man-made obstacles, especially those to early marriage. Parenthood must not mean that a family starts to go downhill. Help must be provided in the home for the overworked housewife, who can then have outside interests. Alongside with these measures, all efforts must be kept up to lower the infant mortality rate.

It is a fallacy that fewer people mean less unemployment or a bigger share of the national prosperity. Fewer people mean a decreased production, and thus the national prosperity is reduced in proportion. It is also wrong to suppose that a shrinking population means more opportunity, since this means that old people work on later in life, thus making it difficult for the young.

The only remedy seems to be the working out for ourselves of a new philosophy and pattern of living. The decision of whether the race is to survive is in the hands of the people themselves. Let us hope that by social amelioration and a moral and spiritual resurgence, the causes of the declining population may be overcome.

Concluding Lecture

EDUCATION FOR CITIZENSHIP

NOTES ON THE CONCLUDING LECTURE BY
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THE search for truth is the aim of all education. In a Fascist State truth is only truth as long as it agrees with Fascist policy and political theory. It will be remembered that in Germany the schools were the first department which the new Reich laid hands on and the minds of German youth were perverted through the educational system.

In a democratic State, a free society, there should be no ban on the free play of the intellect. The search for truth should be its most important function, and education should be unbiased. The truth, when found, may involve radical readjustment in our ideas and way of life, but this should be possible in "free" States. In this way education **can** be unbiased.

Education is a training of the intellect, but it is also concerned with the moral life. It should determine the value set on experience as well as our attitude to other people. Two tenets of the Fascist faith are worship of the State combined with a racial theory of superiority. In a "free" society we are proud of our freedom, and education should give direction along these lines and train pupils for life in a free community. By "free" one does not mean complete freedom, for this could only result in anarchy, but where a wide field is left for individual choice. In the Fascist State, the sphere of conduct where one can choose is very narrow. The ideal in a free society is for the citizen to be a capable member of the community, able to determine as much as possible for himself and free to think for himself, not willing supinely to accept a standard imposed upon him. This is difficult in the world of to-day, because we are so prone to accept the conventional valuation of the crowd instead of standing by our own personal valuation which we ourselves really place on things.

Life is more than a set of rules and conventions. The citizen of a Democratic State should be so educated that he knows how to face the problems and difficulties of life with confidence, and to become a responsible citizen. In some this is a matter of inborn temperament, but it is also a matter of education.

Are the old valued virtues still supreme? In the matter of honesty, compare downright stealing with the Army "scrounging," or the attitude of "the company can stand it." The respect for corporate property is less than it was, and a decline in this basic virtue must be acknowledged. Education should be aware of these changes. In the matter of patriotism, men now plead that they should be respected if they act in good faith

and do what to them seemeth good, no matter if their doings have a deleterious effect on their country. What is education to teach in these matters?

It would be better to think out our attitude to these old virtues—honesty, chastity, charity, patriotism, even punctuality—rather than just accept them as something we inherit. By so doing we shall build up a core of certainty in our own personalities. All education should aim at helping to make happy and mature men and women. In a free society the main object is to secure for each citizen conditions under which personality can develop to its full power and have free scope ; where the basic needs of the personality are satisfied and a man is in harmony with himself, not dependent on advice, but confident and able to make his own decisions.

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